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Seventh Annual Report

OF THE

INSPECTOR OF MINES

PLEASE RETURN

OF THE

STATE OF MONTANA.

CHARLES S. SHOEMAKER, - - - - - INSPECTOR

JOHN H. MILES, - - - - - DEPUTY

DECEMBER 1, 1895.

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DECEMBER 1, 1895.

To His Excellency, Hon. J. E. Rickards, Governor of Montana:

Sir:- I have the honor to submit herewith my Third Annual Report which mentions the condition of the leading mines in the State including those yielding coal; also a list of fatal and non-fatal accidents which have occurred since December 1st, 1894, the cause of which I have examined into personally.

Accompanying my report is that of Deputy State Mine Inspector John H. Miles, whose time has been devoted principally to the mines in Silver Bow County.

The efficiency of this official and the deep interest he has shown in the performance of his duties as Deputy Inspector is shown by his report in its entirety and the intelligent suggestions made therein.

Trusting these reports will meet with your approbation, I have the honor to be,

Your obedient Servant,

CHARLES S. SHOEMAKER.

State Mine Inspector.

Helena, Montana, Dec. 1, 1895.

INTRODUCTORY.

CASUAL OBSERVATIONS.

It is gratifying to note that as the Mining Industry increases throughout the State, modern improvements are introduced, work is made easier, greater facilities are readily forthcoming, the cost of extracting ores is reduced and the science of mining is becoming so systemized that properties carrying low grade ores can be worked profitably.

More care for the safety of miners is being exercised as noticed in the greater number of precautionary measures adopted; also in the careful instructions given to employes and in the rules adopted in many mines.

The improvement in mine ventilation throughout the State is noticable and I am glad to note that managers generally are looking after the health of their underground employees and furnishing them with fresh air so far as can be consistently done.

I am indebted to the Butte Brotherhood of Stationary Engineers for valuable suggestions which assisted in completing the compilation of State Code of Mine Signals.

The very low price of silver has retarded the mining interest of Montana to an extent that is almost incalculable. If silver were quoted to-day at 100 and would remain at these figures the increase in mining industry and development would undoubtedly swell the output to three times the present production.

There are hundreds of good silver mines in Montana already opened which would be worked at once and hundreds of others which would be opened and worked could the owners be assured of a steady paying market.

I find very many gold properties and small mines are being worked now that silver is so low. Old gold mines that have lain idle or been abandoned for years are now being developed and many of them with good results. Prospectors, during the past year, have made many new discoveries and their search for the yellow metal will continue. While Lewis and Clarke County is a good gold producer. Jefferson County is also rich in the same treasure. Gold has been discovered in every county in the State in both placer and quartz formation.

In my opinion, formed after close observation and enquiry, Madison is to-day and will continue to be the banner county as a gold producer.

With one exception the fullest courtesy has been extended me at all mines which I have visited in my official capacity. I wish to thank all managers, superintendents, minor officials and many of the employes for the able assistance rendered me while inspecting the mines in which they were directly or indirectly interested.

EXITS.

I would recommend that all miners working below the 200 foot level should have not less than two exits.

This I deem an absolute necessity as I consider that a valuation cannot be set upon the lives of those who work at such great depth. Two or more exits supply the necessary fresh air and also means or ways of escape should a mine be flooded or on fire or a serious mishap occur in the working shaft.

POWDER.

I find the law governing the handling of powder and storing of same is fairly well complied with. This is a matter of the gravest importance wherein the lives of many miners may be endangered by a violation. The law should be respected and not in the least evaded. With one single exception I have found no cause for complaint so far as a material violation of the law is concerned. In this one case I had the matter corrected at once and found upon inquiry the fault was solely attributed to ignorance of the law.

INDICATORS.

I would recommend the use of chair indicators in all hoists. They are at present scarcely known among mining men. Their great value and usefulness can hardly be estimated until after their utility has been demonstrated. These chair indicators will show the engineer at what station the chairs are in or when the shaft is clear for the passage of cage. For more particulars I would call attention to the report on Drum Lummon mine Lewis and Clarke County.

CROSS HEADS.

There has been no accidents from falling cross-heads during the year.

Notwithstanding this fact I must again insist that cross-heads should be done away with in all shafts. If they must be used they should be made as long as possible as accidents are less liable to occur than with the use of short ones. The law is faulty in permitting their use at all; but if a law governing them is still to exist it should be so corrected as not to allow them to be worked below the 200 foot level when a mine is to be worked permanently. The law should also apply to shafts having a greater incline than forty-five degrees as there is equally as much danger of a cross-head breaking or bucket becoming detached between surface and bottom in an incline as in a vertical shaft.

ACCIDENTS.

The Inspector should be, and generally is, notified of all fatal and non-fatal accidents which occur underground but sometimes the mine managers fail to comply with the law which requires them to inform the Inspector immediately after a death or serious accident. This neglect I attribute more to ignorance (on the part of those in charge of the mines) than to an intention to ignore or evade the law. I herewith give a table of accidents which have occurred since my incumbency. It is of some importance statistically considered.

The accidents reported to me are as follows:

1893, Fatal 29; non-fatal 4.

1894, Fatal 8; non-fatal 5.

1895, Fatal 20; non-fatal 4.

Reported to Deputy State Mine Inspector Miles.

1894, Fatal 19; non-fatal 14.

1895, Fatal 21; non-fatal 14.

Total 1893, Fatal 29; non-fatal 4.

Total 1894, Fatal 27; non-fatal 19.

Total 1895, Fatal 41; non-fatal 18.

While the average fatal is 28 and non-fatal 17 for 1893-4, 1895 shows an increase of 13 fatal and 1 non-fatal over the two preceding years.

This is accounted for by the increased number of mines in operation in 1895, over those worked in 1893-4. Mines working less than five men are not supposed to be visited by the Inspector only in case of death or serious injury by accident underground.

STATISTICAL TABLES.

During my incumbency the number of mines inspected and miners employed therein are shown by the following tables:

	No. of Mines.	No. Men Employed
1893, Gold, Silver and Copper	50	4,309
1894, " " "	57	5,316
1895, " " "	52	2,773

Inspected by Deputy Inspector John H. Miles.

	No. of Mines	No. Men Employed
1894, Gold, Silver and Copper... ..	14	745
1895, " " "	30	3,574
Total 1893	56	4,309
" 1894	71	6,061
" 1895	82	6,347

Of this number of mines inspected there were:

In Silver Bow County in 1893.....	28;	In other Counties	22
" " 1894.....	39;	" "	32
" " 1895.....	48;	" "	34

TOTAL LIST OF COAL MINES.

	No. of Mines	No. Men Employed
1893	5	1,003
1894	7	1,021
1895	6	2,411

GRAND TOTAL COAL AND OTHER MINES.

	No. of Mines	No. Men Employed
1893.....	53	5,312
1894.....	78	7,082
1895	88	8,758

I will add to the total number of men engaged in steady mining 1,242 who are working small mines, and representing, and the large number of prospectors who are classed as miners. This gives a grand total of 10,000 men. I consider this number sufficiently large as my estimate is made from actual observation and general information gathered in the mining districts.

STATE CODE OF SIGNALS.

I am pleased to note that the suggestion made in my report for 1894 for a universal State Code of Mine Signals was so promptly acted upon by the last legislature.

Senate Bill No. 59, creating a State Code of Signals, introduced by Senator Sligh and passed by both Senate and House has had a beneficial effect. The Code is now in operation in every mine in Montana where they are required, (with one exception) and give general satisfaction so far as I have learned.

In obedience to Senate Bill No. 59, I have formulated the Code which is published elsewhere in this report. The Code was compiled by Deputy State Mine Inspector John H. Miles and myself, materially assisted by the Butte Brotherhood of Stationary Engineers whose valuable suggestions were of great help. In order that the law and Code may be in the hands of every mine manager I deem it advisable to publish them in full

in this, my report for 1895, a copy of which will be forwarded to all superintendents and managers of mines.

Following is:

SENATE BILL NO. 59.

AN ACT

To establish a uniform Code of Mine Signals, and to provide for Penalties for refusal or neglect to use them.

Be it enacted by the Legislative Assembly of the State of Montana

Section 1. It is made the duty of the Inspector of Mines of Montana, and he is hereby required to prepare a complete code of signals for use in all mines in this State, worked through a shaft of 75 ft. or more in depth, and employing ten or more men, and cause the same to be made known to each owner or operator of a mine in Montana by printed circular instructions to the end that a uniform code of mine signals may prevail. The said Inspector of Mines of Montana, may add to or change such code of signals as circumstances may require, but no change of signals shall go into effect until a time specified by him, not less than sixty days nor more than ninety days from the time such change shall be ordered by him; Provided, that the code of signals first prepared by him, shall be used in all shaft mines from and after June 1, 1895.

Sec. 2. Any owner or operator of a mine who shall refuse or neglect to cause the signals provided for in Section 1, of this Act to be used in his mine to the exclusion of all other signals, shall be deemed guilty of a misdemeanor and upon conviction of such refusal or neglect, shall be fined in a sum not less than One Hundred (\$100.00) Dollars nor more than Five Hundred (\$500.00) Dollars or by imprisonment in the county jail for a period of not less than thirty days or more than ninety days, in the discretion of the Court, for each and every offense.

Sec. 3. All fines which may be collected under the provisions of this Act, shall be paid into and form a portion of the public school fund in the county in which conviction takes place.

Sec. 4. This Act shall take effect and be in force from and after its passage.

Approved 5-10 P. M. March 7, 1895.

STATE CODE OF MINE SIGNALS.

SIGNAL BELLS.

1 Bell Hoist, 1 Bell Stop, (if in motion.)

2 Bells lower men, 3 Bells hoist men.

4 Bells blasting signal, engineers must answer by raising bucket a few feet and letting it back slowly.

Then 1 Bell hoist men away from blast.

5 Bells steam on, 6 Bells steam off.

7 Bells air on, 8 Bells air off. 3-2-2 send down drills. 3-2-3 send down picks.

9 Bells danger signal, (case of fire or other danger,) then ring number of station where danger exists. No person shall ring any signal bell except the station tender, except in case of danger, or when the main shaft is being sunk. Engineers must slow up when passing stations when men are on the cage.

STATION BELLS.

Bells	Pause	Bells	No. Station	Bells	Pause	Bells	No. Station
2	"	1	1	5	"	1	16
2	"	2	2	5	"	2	17
2	"	3	3	5	"	3	18
2	"	4	4	5	"	4	19
2	"	5	5	5	"	5	20
3	"	1	6	6	"	1	21
3	"	2	7	6	"	2	22
3	"	3	8	6	"	3	23
3	"	4	9	6	"	4	24
3	"	5	10	6	"	5	25
4	"	1	11	7	"	1	26
4	"	2	12	7	"	2	27
4	"	3	13	7	"	3	28
4	"	4	14	7	"	4	29
4	"	5	15	7	"	5	30

Where electric bells are used in connection with other bells.

If cage is wanted ring station signal. Station tender will answer 1 Bell.

Reply 1 Bell to go up.

Reply 2 Bells to go below.

If station is full of ore and station tender is wanted, ring station signal and do not answer back.

If 2-1-2 bells are rung, engineer or station tender does not understand, repeat signal.

In case of danger or accident, ring station signal, station tender will reply 1 bell, ring 9 bells.

One copy of this code should be posted on the gallows frame, and one before the engineer.

To be in effect from and after June 1st, 1895.

This code is subject to change under certain conditons.

C. S. SHOEMAKER,
State Mine Inspector.

JOHN MILES,
Deputy.

RULES FOR COAL MINES.

For the benefit of all officers of Coal Mines I herewith present an extract from House Bill No. 47, passed by the last Legislative Assembly, and the rules governing the Rocky Fork Coal Company of Montana, at Red Lodge, and I would suggest that the clause from said House Bill No. 47, and such rules as may be deemed advisable, be posted in the coal mines of all companies in the State.

Copy of rules posted at mouth of Rocky Fork Coal Company's mine at Red Lodge, Montana.

ROCKY FORK COAL COMPANY OF MONTANA.

Red Lodge, Montana, April 2nd, 1894.

To the Employes of the Rocky Fork Coal Company of Montana:

Your attention is hereby called to the following in House Bill No. 47 of the Statutes of the State of Montana, and you are directed to be governed accordingly.

“And in no case shall more powder be stored in the mine at any one time than in the discretion of the (Mine) Inspector is necessary for each day's use. It shall be unlawful for coal miners in any mine to charge a blasting hole with the loose powder or otherwise than with a properly constructed car-

tridge; and in dry and dusty mines it shall be unlawful to load cartridges in the mines except with powder cans constructed for the purpose."

You will also be governed by the following rules and instructions which will be in force until further notice:

Miners are prohibited from bringing an open or unprotected light nearer than four feet of any place where powder or other explosive is kept.

All employes are strictly enjoined not to enter the mine until first examining the "Bulletin Board" to see if their places are safe, or getting permission from the Fire Boss to enter.

All employes except those employed for the purpose, are instructed not to board a trip of cars while the same are in motion.

Miners must keep their rooms and working places properly secured and timbered; if timbers are not available when needed, miners are instructed to discontinue working until such time as timbers can be supplied.

All employes are required to register, on a board that will be furnished for the purpose, each day before entering the mine, removing their cards again when quitting work for the day. By so doing it can be ascertained at any time just who and how many men are working, and where they are at work.

Employes working in No. 4 Slope are positively instructed to go to and from their work by way of the "Manway" and not stand, talk, walk, or appear on the slope during working hours; and not cross the slope during working hours except when the cable is down.

Should any employe notice a loose rock, or hanging coal, or a squeeze on any part of the workings, he is requested to at once report the same to the Superintendent, and he will be remunerated for the time spent in so doing.

(Signed,)

J. M. FOX,
Manager.

FATAL ACCIDENTS.

Name.	Nationality.	Date.	Mine.	County.	Cause.
1 Andrew Horra	Italian	Dec. 3, 1894	Sand Coulee Coal and Coke Co.....	Cascade	Cave of Coal.....
2 Percy Davis.....	American	Dec. 19, 1894	Park Mine	Lewis and Clarke	Bucket fell on head. Faulty pig-tail..
3 Charles Stone.....	American	Dec. 22, 1894	Sand Coulee Coal and Coke Co.....	Cascade	Cave of Slate.....
4 Con Lowney	Irish	Jan. 25, 1895	Montana Coal and Coke Co	Park	Explosion of Gas
5 John Wans	Norwegian	Feb. 16, 1895	Belt Mine	Cascade	Fall of top rock.....
6 Alvin Walker.....	American	Apr. 7, 1895	Broadwater	Meagher	Fell down ore chute.....
7 Robert Ruffner.....	German	Apr. 24, 1895	Castner Coal and Coke Co	Cascade	Blast
8 Joseph Hakala	Austrian	May 4, 1895	Castner Coal and Coke Co	"	Explosion.....
9 John Eva	American	June 5, 1895	Drum Lumber	Lewis and Clarke	Crushed between cage and timbers.....
10 Peter West	"	June 9, 1895	Saturday Night.....	Jefferson	Blast
11 Albert Pathberg	"	June 13, 1895	Royal Gold	"	"
12 John Phalen	Irish	July 27, 1895	Red Lodge Coal Mine	Granite	Explosion
13 William Workman.....	American	Aug. 27, 1895	Red Lodge Coal Mine	Park	Cave of rock
14 Peter Bjork	Norwegian	Sept. 5, 1895	Little Nell	Jefferson	Concussion of Brain.....
15 Patrick Morris	Irish	Oct. 1, 1895	Dan Tucker	"	Fell down shaft
16 John Weart	"	Oct. 1, 1895	Hope	"	"
17 John Sobolick.....	Austrian	Oct. 3, 1895	Sand Coulee Coal Mine	Cascade	Killed by a mule
18 Joseph Yashush	"	Oct. 28, 1895	Horr Coal Mine	Park	Cave
19 Malcom Morrisson	American	Nov. 2, 1895	Alta	Jefferson.....	Explosion.....
20 John R. Kelly.....	Irish	Nov. 12, 1895	Hope	"	"
21 John Jackino	Italian	Nov. 26, 1895	Red Lodge Coal Mine	Carbon	Fall of top rock.....

NON-FATAL ACCIDENTS.

1 Joseph Tucker.....	American	May 14, 1895	Elkhorn.....	Jefferson	Ankle Fractured
2 Charles Beresford	"	Jan. 25, 1895	Montana Coal and Coke Co	Park	Burned by explosion of gas.....
3 Martin Cummings	Irish	Sept. 28, 1895	Alta	Jefferson	Ribs broken by cave.....

FATAL ACCIDENTS.

Andrew Horra, a coal miner, met with an accident in the Sand Coulee Coal Mines, Cascade County, on the 3d day of December, 1894, from which he died 48 hours after.

The accident happened in 19.6th Butt Entry 11 South. Horra had dropped his pick behind him and it fell with a point up. He was in the act of wedging down coal from the top rock when over a ton of coal and rock fell and crushed him to the floor. In falling he struck the pick in such manner that the upper point penetrated his body about six or seven inches. The wound and the weight of coal which bruised him severely caused such a shock to the nervous system that death resulted as above stated. Andrew Hendricks and Peter Reisks were first at the scene of accident after Horra was hurt and give the particulars as above recited.

Percy Davis, was killed almost instantly in the Park mine at Park City, Lewis and Clarke County, on the 19th of Dec., 1894. He was operating the mine with a Mr. Ide and other Helena parties. Davis at the time or just before the accident was retimbering the shaft about 70 feet below the surface, in company with a miner named Lloyd. A man named Kepner was working the windlass. Mr. Numbrue, the foreman, adjusted two planks in the bucket, lashed them to the windlass rope and told Kepner to lower them down to the men below. This was done and the plank taken from the bucket. Mr. Davis called "all right, hoist away!" Kepner hoisted as usual but when about twenty feet from the surface the bucket in some mysterious manner, became detached from the pig-tail hook and fell back down the shaft striking Davis on the head, and injuring him so seriously he died in about five minutes. The pig-tail hook was not properly constructed and I advised a change to be made. The manager promised to have the alteration made at once.

Charles Stone, on December 22d, 1894, while engaged in taking down loose coal from the face of Room No. 14, No. 4 Butt Entry, 4th East in the Sand Coulee Coal Mines, Cascade County met with a severe accident which resulted in death at 9 o'clock

the same evening. All the loose material except a few fragments had fallen and while taking down these fragments a large flake of draw slate which had been repeatedly sounded and was thought to be safe suddenly gave way and fell upon Stone injuring him fatally. Louis Roberts, a working partner, immediately called assistance when Stone was released from the load of slate and conveyed outside. He lived about 10 hours after the accident. It appears Roberts had cautioned Stone to keep a close lookout as the slate was not safely lodged. Robert Hodgson who assisted in removing Stone from the mine makes the same statement and gives the same version of the accident as does Roberts.

Con Lowney, a coal miner in the employ of the Montana Coal and Coke Company, located at Horr, Park County, came to his death on the 25th of January in Room No. 3 on Cross Entry of Mine No. 1. Explosive gasses had accumulated in this particular room. Lowney and his partner, Euge Underwood and Charles Beresford the pit boss, were engaged with their jackets in fanning the gas out. Beresford at the moment the explosion occurred was watching the gas by the aid of his lighted lamp when a miner named John Chemplas, entered the room with a lighted torch. The gas ignited immediately and a terrific explosion followed resulting in the instant death of Lowney and severe injuries to his fellow workmen. Beresford, when he saw the torch, threw himself down flat and kept his face on the ground thus protecting his lungs from the flames.

It appears Lowney was not a practical miner, was ignorant of what course to pursue in a case of this nature and hence failed to take the proper precaution for protecting his life. I will add to this account of the accident the report of Dr. Allen, the Company's Physician.

COPY.

Killed—January 25, 1895, Con Lowney, a miner, worked in Room No. 3, on Cross cut entry of Mine No. 1.

Dead when taken from mine.

External examination revealed an abrasion of skin on each hand, superficial burns on back. No bones broken. No signs

of asphyxiation by after damp; not deeming further post mortem necessary I directed that the body be prepared for burial. About six weeks previous to Mr. Lowney's death he came to me to be examined for heart troubles. On examination I found him to be suffering from mitral regurgitation caused by rheumatic deposit around the mitral valves of the heart and aggravated by drinking. This condition of the heart, I think, caused his death, superinduced by the explosion of gas.

(Signed)

Very Respectfully,

W. H. ALLEN,

Physician to the Montana Coal and Coke Co.

I hereby certify that the above is a true copy of the report of accidents for January, 1895; of the employes of the Montana Coal and Coke Co. as filed by me in office of said Company.

W. H. ALLEN, M. D.

John Wans, on the 16th of February, 1895, a coal miner employed in the Belt mine, owned by the Castner Coal and Coke Co. of Cascade County, was almost instantly killed by a fall of top rock in the back entry of the 3d North in Mine No. 1. Wans had been working in the first cross entry 3d North, but left his work and went into the back entry to chat with a couple of miners named Mat Nieni and John Landerson. Nieni says that he told Wans to "look out" and "stand back," that the rock was "coming." Wans looked up and said "Oh, this is all right." Wans continued to stand there for about five minutes when two tons of the rock came down and crushed him to death almost instantly. Landerson who was shoveling coal into a car a short distance from the scene of accident, corroborates the statement of Nieni.

Note—Had Nieni and Landerson taken down the rock when they discovered it was loose Wans would not have been killed; or had Wans been attending to his work he might have been living to-day. It is evident that all three men neglected their duty.

Alvin Walker, sustained injuries in the Broadwater Mine, Meagher County, on the 7th of April, which resulted fatally in about six hours. Walker was an employe in the store of Mr. Fitzsimons at Neihart. In company with L. H. Fitzsimons,

a younger brother of the merchant and Sam Ackersley, shift boss of the Broadwater he paid a visit to the mine. The parties climbed 128 feet up a raise, to the stopes and stopped near a chute used for hoisting timbers and tools.

A miner named James Connors had just raised the chute door to let down a wheelbarrow. While he was windlassing up the rope young Walker stepped into the open chute and fell a distance of 128 feet. The injuries received from the fall were so serious he died from their effects in about six hours.

Connors stated to me that he cautioned Walker about danger and told him the chute door was open. On the other hand Fitzsimons says that Connors did not caution Walker, but that he opened the door and said nothing about it. He also says that Walker was near sighted and fell to his death through the negligence of Connors.

I think Ackersley, the shift boss should not be exonerated. Having invited these strangers, who were entirely unacquainted with mines and mining operations, to visit these Broadwater properties, the shift boss should have exercised every possible care and taken extra precautionary measures to protect their lives. Failing to do this Mr. Ackersley, being an official at the time, and acting as guide to the visitors, should in my opinion be held responsible for the accident and subsequent death of young Walker.

Robert Ruffner, a miner working in No. 1 mine, Castner Coal and Coke Company, Belt, Cascade County, on April 24th, was struck by a sulphur ball that came from a blast fired in No. 3, back entry, by another miner named Mat Kupala. Kupala, and Ruffner and his partner had shots to fire at the same time. Ruffner went to the corner of his room to see that other workmen had all passed out. Kupala and his partner, fired their fuse and passed out another way without first giving the proper warning to Ruffner. While the latter was standing at the corner of his room, Kupala's blast went off and threw a piece of coal impregnated with sulphur, a distance of 115 feet in Ruffners direction. The coal struck Ruffner in the side with force sufficient to lacerate the flesh and break the bones. He was so severely injured that death ensued the morning following.

There is no doubt but that Kupala was responsible for Ruffner's death, as the warning signal was not given before firing the shot.

Joseph Hakala, a coal miner, was instantly killed by an explosion in the 4th South back entry of Mine No. 2, Castner Coal and Coke Co. located at Belt, Cascade County, on the 14th of May. Hakala had prepared three holes for blasting. He lighted the fuse of all three and stepped into a cross-cut to be out of the way of flying coal raised by the shots. Only two of the charges exploded. Hakala waited a few moments and then returned to the face of the entry just as the third shot went off and received the full force of the flying coal in his breast and face. He must have thought all the charges had exploded or he certainly would not have returned so soon.

John Eva, was instantly killed on June 5th, at the Drum Lummon Mine in Lewis and Clarke County, his body having been caught between the cage and shaft timbers. Eva had placed on the cage a car loaded with drills, mounted the car and started to go from the 800 up to the 400 level. After ascending five or six sets Eva's body must have caught in a manner which caused the car to tip back against the hanging side of the shaft timbers. This is a supposition only as the belt which he had worn was found at the station below, in a torn condition. As the timbers showed no marks of the drills having come in contact with them it is almost certain that Eva leaned back in such a position that the wall plate caught him about where the belt was worn round the waist and crushed him between the car and timbers. In the Drum Lummon Mine men are strictly forbidden to ride on cars loaded with tools.

Peter West and Albert Patberg, two miners working at the Saturday Night Mine, Jefferson County, were almost instantly killed on June 9th. They were at work in the shaft and Louis Johnson, and John Elliott were working in a drift close by. At supper time they had eight holes to blast—three in the drift and five in the shaft. Having lighted the fuse in all charges they retired to a safe distance. Johnson and Elliott afterwards stated that they counted eight blasts and then the four men went to supper. After supper they all returned. Pat-

berg and West cleaned up the rock broken down by the blasts and went to drilling, but evidently in an old hole. Johnson noticed the drill was sinking too fast for work in solid rock and was about to mention it when an explosion took place. It is supposed that but seven holes were exploded or that but a portion of the powder in the 8th hole was blasted. The latter theory being correct the men must have driven the drill down to the nexploded powder and caused it to blast by concussion.

John Phalen, a miner working in the Royal Gold Mine, Granite County, met with instant death on July 13th. So far as I can learn his death was the result of an unforeseen accident, but I give the statemnt of J. E. Bowman. He says: "We were laying a platform. I had a plank up which was too long to go in. Phalen was trying to get some solid rock out of the corner of the cross-cuts, so that the plank would fit in. Just as I went back to get the plank an explosion took place. I was 15 or 20 feet away and behind Phalen. The explosion blew out the lights. I went to where Phalen's body was lying and dragged him back about six or eight feet. I then got the machine men and Mr. Fletcher, the foreman. After they came we took him out." Mr. Fletcher thinks there must have been some powder which did not explode in the bottom of a hole which had been blasted and that the point of Phalen's pick must have struck it as he was loosening the rock. Mr. Fletcher and those who were working near the scene of accident are of the opinion that the theory recited above is correct.

William Workman, a miner employed in the Red Lodge Coal Mine at Red Lodge, Park County, was instantly killed on the 27th of August in Room 21, 2d Entry East, No. 5 Mine. Workman was filling a car with coal when a slab of rock weighing about 300 pounds fell from the roof. The rock first landed on a bench of coal, then tipped over and rolled down striking Workman in such manner as to crush in his breast. The rock which fell had been sounded a few moments before by a miner named Andrew Bentilla who said it was secure. Employes in the mine informed me that plenty of props are always at hand and that the men are instructed to be cautious and not to spare any pains or material in making the ground safe.

Peter Bjork, (pronounced Burk) a Scandinavian, was instantly killed on the 5th of September, in the Little Nell Mine located at Lump Gulch, Jefferson County, owned and operated by Bell and Head. Bjork was working as a car man. Himself and others were adjusting a bell cord in the shaft. A box made of two inch plank and about 18 inches square, which had been used on the 150 foot level, fell down the shaft to the 250 level and struck Bjork on the head with such force that death resulted almost instantly, evidently from concussion of the brain.

I found no one who could account for the box falling, as the cord was hanging on the opposite side of the shaft from where the box was lying and furthermore no person was near it when it fell.

Pat Morris, a miner working in the Dan Tucker Mine, Jefferson County, was instantly killed on the 1st of October. Morris and a miner named Dennis Conner were working in the level a short distance from and near the bottom of the shaft. They had prepared some holes for blasting, lighted the fuse and got on to the bucket to go to the surface. When they had reached a point 160 feet from the bottom the blasts went off and the concussion blew out the lights of both men. From this particular point to the surface the shaft is perpendicular. Below this point the shaft is on an incline of about 70 degrees to the south. The angle in the shaft necessitates the use of a roller on one of the hanging wall timbers to keep the rope from cutting into the plate. Morris neglected to stand straight up on the bucket when he reached the angle and one of his shoulders must have come in contact with the roller.

This theory is advanced because at this point, or angle Morris shouted to Conner to "stop the bucket." Conner tried to do so and then attempted to get a firm hold of Morris and prevent him from falling off the bucket. It was impossible for Connor to accomplish both acts at once as he was compelled to use one hand in holding on to the rope. As a result of Connor's failure to seize the man, Morris fell to the bottom of the shaft, 160 feet, thereby sustaining injuries which resulted in instant death.

John Weart, a pumpman was killed almost instantly in the shaft of the Hope Mine at Basin, Jefferson County, on the 1st of October. Weart fell into and down the shaft a distance of 200 feet. On either side of the shaft and three feet above the floor an iron bar is in position. These bars are used to prevent men from walking or falling into the shaft. Weart raised one of the cross bars, took hold of the hoisting rope and gave it a shake in order to attract the attention of the station tender below, the shaking being a signal used to signify that the cage was wanted at the tunnel station as Weart desired to go below to attend to the pump. John Buckley states that when Weart fell he landed between the cage and foot wall of the incline shaft. Bernard Wall says that at the time of the accident he (Wall) was engaged in filling the lubricator on the steam line to the pump, in the other compartment of the shaft, and had his back turned to Weart and could not see what he was doing but heard the noise caused by Weart's body as it passed down the shaft. Weart lived four hours after the accident.

John Sobolick. This man met his death at the heels of a resentful mule who objected to the forcible suasion of an oak sprag. Sobolisk was hauling coal with mule power assistance, in the Sand Coulee Mine, Cascade County, on the 3d of October. He attempted to get more speed out of the refractory animal and utilized the sprag as a persuasive argument which the mule resented and suddenly landed both hind feet against Sobolisk's stomach with force sufficient to disarrange the mans internal organism. John died the day following.

Joseph Yashush. On the 28th of October, while at work in the face of the main entry at the Horr Coal Mines, Park County, Joseph Yashush was so seriously injured that death resulted fifteen hours later. He had a contract in partnership with Mike Sovall to drive the entry. As progress was made they found that the layers had changed from the original formation and instead of lying flat were standing up and down. The coal had been mined out for eight feet ahead. While engaged in driving, a piece of rock, wedge shaped with the sharp edge up, dropped out and caught Yashush in such a manner he was crushed to the floor. The rock weighed about five tons. Ya-

shush was severely injured internally. No possible blame is attached to the company as the boss who inspected the work daily, ordered Yashush and Sovall, only two hours previous to the accident to put in a set of timbers and secure the ground.

Malcolm Morrison. While working in the raise of the Alta Mine, Jefferson County, Nov. 2d, Malcolm Morrison was instantly killed by the explosion of a box of giant powder and caps. Nine holes had been drilled by Morrison and C. M. Johnson. Morrison went to the magazine, 100 feet distant to make up the charges. In a very short time, Johnson, Chas. Couch and Gust Dolman were startled by a terrible explosion. They repaired to the place where Morrison had gone and found his body in a horribly mutilated condition, his left leg blown off and lying ten feet away. The index finger of left hand was also gone and the body and face badly torn. It was supposed the caps exploded first as pieces of them were found in Morrison's clothing and boots. In the absence of positive evidence it is impossible to determine the precise cause of the explosion.

John R. Kelly was instantly killed and M. C. McKown seriously injured about 5:30 o'clock Tuesday, November 12th, by the premature explosion of blasts in the South crosscut of the 100 level of the Hope Mine at Basin, Jefferson County. The men had drilled and charged 16 holes and touched the fuses of all but two when the first shot exploded. Kelly was instantly killed, one leg being blown off and his body horribly mutilated otherwise. McKown was thrown 30 feet along the crosscut by the force of the first explosion and as he was crawling along in the dark to get out of danger the other shots went off in quick succession, hurrying him along and bringing down dirt and broken rock on the body of Kelly.

On reaching the end of the crosscut McKown gave the alarm and Foreman Martin Buckley got the men from the 200 level and went to the locality of the explosion. They had to dig Kelly's body out from under the pile of dirt heaped on it by the explosions. McKown was assisted to the surface. It was found that no bones were broken, though he was suffering severely from the shock, and for some time afterwards was deaf. All his clothing had been stripped from him by the force of the explosions.

John Jackins, was instantly killed November 26, in Room 98, first entry East, in the Red Lodge Coal Mines. Jackins and his partner were putting up a prop when a slab of toprock, weighing about one ton, dropped from the roof struck Jackins in such a manner he was crushed to the floor and died in a few seconds. The rock was of peculiar form and lay in such shape that it showed no signs of danger, the outer edge being thin and showing no seam. The rock was also of that kind often found which gives back no hollow sound when struck with a hammer, indicating it is loose. The management is almost perfect so far as precautionary measures for the protection of men's lives are concerned, hence I think no blame should attach to the company for the accident.

NON-FATAL ACCIDENTS.

Joseph Lucker, a miner working at the Elkhorn Mine, Jefferson County, on May 14th, had a bone in one of his ankles fractured by a piece of ore that rolled down a 45 degree incline raise.

Charles Beresford, Fire Boss in Mine No. 1, Montana Coal and Coke Co., Horr, Park County, on January 25, had his face and hands badly burned by an explosion of gas in room No. 3, on Cross Entry Mine No. 1.

Eugene Underwood was slightly burned at the same time and place and by the same explosion.

Martin Cummings, a miner at the Alta Mine, Jefferson Co., on September 28th, was seriously injured while working in a three compartment upraise, and just after having broken through to the level above. He was in the act of placing some lagging when a slab of ore turned out from the hanging wall and in falling caught Cummings in such a manner as to crush him down. Several ribs were broken and other injuries sustained.

CONDITION OF MINES.

SILVER BOW COUNTY.

The Thomas Heaney, located near Butte, owned by William Owsley and John Black, operated by Wm. Johnson, Henry Olson, Supt. and Gen'l Manager, employs 10 miners and 4 topmen. The depth of main shaft is 200 feet, 100 feet was sunk in 1895. The length of drift is ninety feet. The shaft is two compartment and square sets are used in timbering. An Autumway, Iowa, Engine, 3-4 inch steel rope and bucket are used in hoisting. The character of ore is silver. While there is but one exit the ventilation is fairly good.

The East Hibernia, located near Butte, owned by the A. J. Davis Estate, operated by Sullivan & Co., Tim Sullivan Supt. and Manager, employs 16 miners and one laborer underground and 3 topmen. The main shaft is two compartment, 350 feet deep, 100 feet of which was sunk in 1895. The length of drifts is 100 feet and crosscuts 210 feet. The mine is timbered with stulls and square sets. A Ledgerwood Engine, 1 in. steel rope and cage are used in hoisting. Safety appliances, tested each week are in use. There is but one exit. Two engineers are employed.

The Blue Jay, located in Butte and operated by the Butte & Boston Co., C. H. Palmer, Manager, J. L. Inverill, Supt., Ed. Rodda, Foreman, employs 69 miners and 9 laborers underground and 12 topmen. The main shaft is two compartment, 650 feet deep, 100 feet has been sunk this year. Stulls and square sets are used in timbering. The character of ore is copper and silver. A Fraser and Chalmer 9 1-2x12 engine, 1 in. steel rope and cage are used in hoisting. Three engineers are employed. Safety appliances, tested three times each week are in use. There are two exits and ventilation is good.

Note—A new shaft is at present being raised and will reach the surface by November 1st. When completed it will not only furnish excellent ventilation, and extra means of exit for

the employes but will also demonstrate the superior workmanship of those at present engaged in its construction.

The Alice, located at Walkerville, owned and operated by the Alice Mining and Milling Company, T. W. Buzzo, Supt. and Gen'l Manager, John Rich, Foreman, employs 85 miners and 15 topmen. The main shaft is 3 compartment, 1,500 feet deep, and is timbered with half and square sets. Two engineers are employed, the character of ore is gold and silver, safety appliances tested each week are in use, there are 6 exits and ventilation is excellent.

The Magna Charta, located at Walkerville, owned and operated by the Alice Mining Co., T. W. Buzzo, Supt and Gen'l Manager, John Rich, Foreman, employs eight miners and two topmen. The main shaft is 3 compartment 600 feet deep and is timbered with stulls and square sets. The character of ore is gold and silver, safety appliances tested each week are in use, there are four exits and ventilation is good.

Note—The Blue Wing and Paymaster Mines, are also operated by the Alice Mining Company with three men in each mine.

The Lexington, located at Walkerville, owned and operated by the Lexington Mining Co., C. C. Ruger, Supt. and Manager, J. D. Vacchiery, Foreman, employs 12 miners and two topmen. The main shaft is two compartment, 1,500 feet deep, timbered with square sets and stulls. This mine has also been opened by a tunnel 200 feet in length. The character of ore is gold and silver, but one engineer is employed, safety appliances tested each week are in use, there are six exits and ventilation is good.

The Silver Bow No. 1, located in Butte, owned and operated by the Butte and Boston Mining Co., C. H. Palmer, Manager, James Hoatson, Supt., Joe Hensworth, Foreman, employs 275 miners and 20 laborers underground and 17 topmen. The main shaft is three compartment, 1,000 feet deep, timbered with square sets 10x10 and 8x8. An A. P. Aliss Corliss Engine, 3-4x4 in. steel rope and double deck cages are used in hoisting. Three engineers are employed, safety appliances tested each week are in place, there are three exits and ventilation is excellent.

The Silver Bow No. 2, located in Butte, owned and operated by the Butte and Boston Mining Co., C. H. Palmer General Manager, Jas. Hoatson, Supt., Joe Hensworth, Foreman, employs 18 miners and two laborers underground and two topmen. The main shaft is two compartment to the 500, three compartment below to the 700 foot level and is timbered with square sets and 10x10 timbers. Character of ore is copper and silver. A Ledgerwood engine, 1 in. steel rope and cages are used for hoisting. Two engineers are employed, safety appliances tested each week are in place, there are three exits and ventilation is first class.

Note—Finger boards are in place at every turn in all the levels of both Silver Bow No. 1 and Silver Bow No. 2. These finger boards are for the purpose of pointing out the exits. William Garnes and John H. Miles are shift bosses.

The West Hibernia, located near Burlington, owned by the A. J. Davis Estate, operated by Kornberg and Ellingwood, G. C. Kornberg, Supt. and Gen'l Manager, Chas. Bill, Foreman, employs 30 miners underground and two topmen. The main shaft is two compartment, 390 feet deep, 105 feet has been sunk in the winze during the year 1895. The length of the drifts is 1,000 feet. Timbering is done with square sets and stulls. Ledgerwood engine, 1 in. steel rope and cages are used in hoisting. Three engineers are employed, safety appliances, tested each week are in place, there are three exits and ventilation is good. Character of ore silver.

The Nettie No. 1 Mine, located at Butte, owned by the Colorado Smelting and Mining Co., C. W. Goodale, Gen'l Manager, John Hewett, Supt., Joseph Reynolds, Foreman, employs 16 miners and one topman. The main shaft is double compartment, depth 300 feet, length of drifts 500 feet. The mine is timbered with square sets and stulls. Griffith and Wedge engine, 7-8 in. steel rope and cages are used in hoisting. Safety appliances, tested every week, are in place, two engineers are employed; there are six exits and ventilation is good, character of ore silver.

The Nettie No. 2, located in Butte, owned, operated and officered by the same parties as Nettie No. 1, employs 7 miners and

one topman. The main shaft is 450 feet deep and double compartment, 390 feet of drifting has been done and the timbering used is composed of square sets and stulls. The character of ore is silver. Ledgerwood engine, 5-8 in. steel rope and cages are used in hoisting. But one engineer is employed. There are six exits and ventilation is good.

Note—The shaft of the Nettie No. 2 is on an incline of about 38 degrees.

The Nettie No. 3, located at Butte, owned, operated, officered and managed by the same parties as Nettie No. 1 and Nettie No. 2, employs six miners and two topmen.

The main shaft is two compartment, 500 feet deep and timbered with square sets and stulls. The character of ore silver. A Hendey & Myer engine, 1 in. steel rope and cages are used in hoisting, safety appliances tested every week are in place, there are six exits and ventilation is good.

The East Grey Rock, located at Centerville, owned and operated by the Butte and Boston Mining Co., C. H. Palmer, Manager, Jas. Hoatson, Supt., Dave Polkinhorn, foreman, employs 140 miners and 16 topmen. The main shaft is three compartment, 1,400 feet deep, 180 feet has been sunk this year. Square sets and stulls are used in timbering. A Chicago Iron Works engine 1-2x5 in. steel rope and double decked cages are used in hoisting. Safety appliances tested every week are in place. Three engineers are constantly employed, the character of ore is copper and silver, there are three exits and ventilation is medium.

The Gem Mine, located at Walkerville, owned by Murray & Carroll, operated by the Butte & Boston Mining Company, Thos. Couch, Manager, James Hoatson, Supt., Al Hall, Foreman, employs twelve miners and two laborers underground and two topmen. The 300 foot double compartment shaft has been sunk 100 feet this year. There are but 70 feet of drifts. The mine is timbered with stulls and tunnel sets. A Frisby friction clutch engine, 7-8 in. steel rope and buckets are used in hoisting. Two engineers are employed, the character of ore is copper and silver, there is but one exit and ventilation is fair.

The Rarus Mine, located above Meaderville, owned and oper-

ated by the Montana Ore Purchasing Company, F. A. Heinze Manager, F. J. M. Rowe, Supt. and Foreman, employs 93 miners and 36 topmen. The main shaft is 760 feet deep and has been sunk 160 feet this year. The shaft is two compartment to the 600 foot level and three compartment from the 600 to the 760 foot level. Stulls and square sets are used in timbering. The character of ore is copper and silver. An Autumway, Iowa, engine, 10x12, 7-8 in. steel rope and cages are used in hoisting. Safety appliances tested each week are in place. There is but one exit and ventilation is poor.

Note—The ventilation is better than would naturally be expected when one considers the depth, 760 feet. I notified Mr. Heinze of the extreme danger to his employes with only the shaft as a means of exit, and am pleased to note that an upraise will soon be completed. Thus furnishing the men with more protection in case of danger by fire or flood.

The Gem Mine, located near Butte, owned by the A. J. Davis Estate, operated by Bennett and Clark, and managed by the same company, employs three miners and one topman. The shaft is double compartment, and 250 feet deep, 50 feet of which has been sunk this year. Stulls are used for timbering, the character of ore is copper and silver. A Webster, Camp and Lane engine, 5-8 in. steel rope and buckets are used in hoisting. One engineer is employed there is but one exit but the ventilation is good.

The Lonolomne Mine, located at Walkerville, owned by John O'Rourke et al., operated by Sam Sewart and Parks, who are also managers, employs 4 miners and three topmen. The shaft is two compartment, 75 feet deep, 25 feet of which was sunk this year. Stulls are used in timbering. A whim, 5-8 in. steel rope and bucket are used in hoisting. The character of ore is copper and silver, there is but one exit and ventilation is good.

The Mountain Chief Mine, located above Meaderville, operated and managed by F. A. Heinze; T. H. Williams, Foreman, employs 7 miners and 5 topmen. The main shaft is double compartment, 400 feet deep. Character of ore copper and silver. A Chicago Iron Works engine, 3-4 in. steel rope and cages are used in hoisting. Safety appliances tested every day are

in place. Two engineers are employed, there are four exits and ventilation is good.

Note—This mine has been idle for a number of years. It is now being cleaned out and put in proper condition preparatory to extracting ore.

MINES.

GRANITE COUNTY.

The Hope, located at Philipsburg, is owned and operated by the Hope Mining Company. N. B. Ringling is Gen'l Manager, Henry Reyfeldt, Supt. and Foreman. Twenty-six miners and five topmen are employed. The main shaft is single compartment, timbered with stulls and square sets. Hoisting is done by engine with 5-8 in. steel rope. There are no safety appliances in use. The mine has exits and ventilation is good. The Hope is also opened up by a tunnel 1,870 feet in length. The character of ore is silver.

Note—Wooden boxes are continuously carried forward and used as air courses. These boxes are run over head in drifts and levels and good ventilation is secured by their use.

The Harrison, located at Combination is owned and operated by the Harrison et al Mining and Milling Company, F. H. Bird, Supt. and Manager, J. D. Carroll, Foreman. Eighty miners and twenty-five topmen are employed. The shaft is two compartment, 255 feet deep, timbered with stulls. Hoisting is done with Ledgerwood engine, 1 in. steel rope and single deck cage. Safety appliances are in place, are tested twice each month, there are six exits from the mine, ventilation is good and the character of ore silver concentrates.

Note—The principal vein of this mine comes under the technical name of "Blanket Vein" and lies at a pitch or incline of 25 feet in 100 feet. It is protected by splendid foot and hanging walls. The ore is treated in the company's mill located about one and a half mile below the mine.

The Bi-Metallic, this mine is owned and operated by the Bi-Metallic Mining Company and is situated at Granite. Paul A. Fusz is Superintendent and Manager, James Willoughby, Foreman. Seventy-five miners and twenty-five topmen are constantly employed. The main shaft is three compartment, 1,500 feet deep and timbered with square sets and stulls. Hoisting is done by steam engine 5-8x6 inch steel rope and double decked cages, safety appliances tested each month, are in place. The number of exits is four, ventilation is good, character of ore silver.

Note—In February, 1894, the company started a drain tunnel which will be 7,000 feet in length when completed. It will tap the Bi-Metallic at a depth of 1,000 feet.

The Royal Gold Mine of Granite, is owned and operated by the Royal Gold Mining Company, Willard Bennett, Superintendent and Manager, Jacob Fletcher, Foreman. The Company employs fourteen miners and two topmen. The mine is operated entirely through tunnels, timbered with stulls. There are four exits, ventilation is good, character of ore is free gold.

Note—No. 1 tunnel is in a distance of 1,000 feet. No. 2 is in 1,600 feet. No. 3 is in 1,500 feet and No. 4 is in 800 feet. The ore of the Royal Gold Mine is free gold. It is conducted to a ten stamp mill over a gravity tramway, 1,200 feet long. Two machine drills are constantly in use in the mine.

The Queen Mine. This property is owned and operated by the Sunrise Mining Company, F. W. Sherman, Superintendent and Manager, J. D. Fletcher, Foreman. The mine is located at Stone Station and employs 11 miners and 2 topmen. The property is developed and worked by tunnel the main tunnel being in a distance of 650 feet. Stulls are used in timbering. There are six exits and ventilation is excellent. The character of ore is free gold.

Note—No. 1 tunnel is in 425 feet. No. 2 is in 320 feet. No. 3 East, 50 feet. No. 2 East 225 feet. No. 1 East 400 feet. The ore of the Queen Mine is transported to a 10-stamp mill by a tramway 1,300 feet in length.

MADISON COUNTY.

The Monitor, located at Norris, owned and operated by the Monitor Gold Mining Company, S. K. Knox, Superintendent and Manager, A. McKinnon, Foreman, employs eight miners and one topman. The shaft is double compartment 160 feet deep and the length of tunnel is 200 feet. Both are timbered with stulls and half sets. Steam engine, 5-8 in. steel rope with bucket and crosshead are used for hoisting. There are two exits, ventilation is good and character of ore is base.

The Columbus, located at Norris is owned by the Col. Gold Mining Company and operated and managed by Colonel J. H. Johnson & Co., J. H. McConnell, Foreman. Five miners and two topmen are employed. The shaft is 100 feet deep, windlass and 7-8 manilla rope are used in hoisting. The character of ore is base gold.

The Revenue, located at Norris, owned and operated by the Revenue Gold Mining and Milling Company, L. A. Dunham, Supt. and Manager, H. J. Kingsbury, Foreman, employs 31 miners and 5 topmen. The shaft is double compartment, 150 feet deep, timbered with stulls and square sets. A steam engine, 7-8 in. steel rope and bucket are used in hoisting. The engine is a 6x14 Kendall and Roberts. There are six exits, ventilation is good, character of ore is oxide gold.

Note—The ore from this mine is treated by cyanide process, at the company mill two miles away.

The Easton, located near Virginia City, owned by H. Fine and Pankey, operated and managed by H. Elling, J. H. Pankey Supt. and Foreman, employs eight miners and four topmen. The main shaft is double compartment, 220 feet deep, and the tunnel is in 1,200 feet. Both are timbered with stulls. Hoisting is done with a 5x8 Copeland & Bacon engine, 5-8 in. steel rope and bucket and crosshead. There are four exits, ventilation is good, character of ore base silver and concentrating.

The Leiter Mine, located at Sheridan, owned and operated by L. Z. and T. Benton Leiter, T. B. Leiter, Manager, J. H. Giles Supt., Alex Cruckshank, Foreman, employs 63 miners and six

topmen. The main shaft is two compartment, and 300 feet deep. The length of main tunnel is 1,600 feet. Timbering is done with square sets and stulls hoisting is done with a 9x12 Autumway engine, 3-4 inch steel rope and single deck cage. Safety appliances are in place and tested each week. There are three exits, ventilation is good and character of ore is free gold.

Note—A shaft 300 feet deep has been sunk in the tunnel, 1,050 feet from the mouth. A single stroke electric bell is in use in this mine. Greys patent chairs are also used. They are connected to the cage and are worked by levers and springs.

The Clipper Mine, located at Pony, owned and operated by Morris and Elling, W. W. Morris, Supt. and Manager, Jas. Rooney, Foreman, employs 17 miners and one topman. This mine is developed entirely by tunnels. No. 1 is in 700 feet, No. 2, 800 feet, No. 3, 650 feet, No. 4, 700 feet. Stulls and tunnel sets are used in timbering and the free gold ore is taken out by tunnel cars. There are four exits and ventilation is good.

Note—This company own many good mines in the vicinity of Pony, among them the Boss Tweed, Willow Creek, Ned, Strawberry, and others which will, in a very short time be active producers of gold. The facilities for ready production, (water, and wood) are highly favorable and a railroad is close at hand.

The White Eagle, located at Red Bluff, owned, operated and managed by Hinds and Weinberger, B. F. McDevitt, Foreman, employs five miners and one topman. The shaft is two compartment, 116 feet deep and timbered with stulls, whim, 5-8 in. steel rope and bucket are used in hoisting. There are two exits and ventilation is good. Character of ore gold.

PARK COUNTY.

The McCauley, located at Gardner, owned and operated by the McCauley Gold Mining and Milling Company, A. Carter, Supt. and Manager, Mike Walsh, Foreman, employs 15 miners. The mine is worked through a 500 foot tunnel, timbered with

stulls and tunnel cars are used for running out the free milling gold ore. There are three exits and ventilation is good.

Note—The ore produced from this mine is treated at a twenty stamp mill and is hauled there by teams.

The Crevasse Mountain, located at Crevasse, owned and operated by the Crevasse Mountain Mining Co., W. E. Jewell, Manager, F. H. Nettleton, Supt., James Terrill, Foreman, employs 9 miners. The mine is worked through tunnel and shaft. The former 800 feet long the latter 100 feet deep and timbered with stulls. Free milling ore is found and ventilation is good.

Note—This company owns a 20-stamp mill where the ore is treated.

The Legal Tender, located at Bear Gulch, owned and operated by the Bear Gulch Mining Company, W. E. Jewell, Supt. and Manager, James Kitt, Foreman, employs 15 miners and one topman. It is worked through a 260 foot tunnel which is timbered with stulls and square sets. The ore is free gold and ventilation is excellent.

Note—The ore from this mine, which is now being hauled by teams, will soon be transported on an 1,800 gravity tramway now in course of construction, to the twenty stamp mill owned by the company.

The Great Eastern, located at Chico, owned and operated by the National Park Mining Company, E. W. Bach, Supt. and Manager, A. P. Smith, Foreman, employs six miners and seven topmen. The shaft is two compartment, 100 feet deep and timbered with stulls. A 6 1-4x10 Ledgerwood engine, 5-8 in. steel rope and bucket are used in hoisting. There are two exits ventilation is not very good, character of ore concentrating gold.

JEFFERSON COUNTY.

The Elkhorn, located at Elkhorn, owned and operated by the Elkhorn Mining Company, C. A. Molson, Supt. and Manager, William Davey, Foreman, employs 75 miners and 25 topmen. This mine is worked through a single compartment incline shaft 1,975 feet in depth, timbered with stulls. A Fraser and

Chalmer's engine 1 1-4 inch steel rope and double decked skip are used in hoisting. The number of exits is two, character of ore silver and lead.

Note—The greater portion of the ore taken from the Elkhorn is treated at the Elkhorn mill. The lead ore is shipped to the East Helena smelter and treated there. Some of the peculiarities of this mine are the walls, the hanging being of slate while the foot wall is of sandstone. The Elkhorn is the deepest mine in the state and has been in active and paying operation for 15 years.

The Aurora, located at Silver Star, owned, operated and managed by James McFarland, Henry Seigchrist, Supt. and Foreman, employs 13 miners and 5 topmen. The workings are done by a single compartment shaft 200 feet deep and a tunnel 800 feet in length, both timbered with square sets and stulls. Mode of hoist is by whim, 3-4 inch steel rope and bucket. There are two exits and character of ore is free and smelting gold.

The Hope, located at Basin, owned and operated by the Hope Mining Company, F. N. Fletcher, Supt. and Manager, Martin Buckley, Foreman, employs 73 miners and 14 topmen. The main shaft is two compartment, 275 feet deep. There is also a tunnel 55 feet in length. Both tunnel and shaft are timbered with stulls, half-sets and square sets. Hoisting is done with a 10x12 Ledgerwood engine, one inch steel rope and cages. Safety appliances, tested twice each month, are in place, number of exits two, ventilation good, character of ore concentrating gold.

Note—A small engine has been placed on the 100-foot level and is used in hoisting from the shaft which is being sunk to the 400-foot level.

The Katie, located at Basin, owned and operated by the Basin and Baystate Mining Company, Alex Glass, Supt. and Manager, C. Whitmore, Foreman, employs forty miners and nine topmen. The Mine is operated through a two compartment shaft 385 feet deep. There is also a tunnel in 140 feet. Square sets are used in timbering. Steam engine, steel rope and cage

are used for hoisting, safety appliances are in place and tested twice each month, ventilation is good, there are two exits and character of ore is concentrating gold.

Note—Since the inspection of the Katie the entire works, concentrator, mill and hoist have been destroyed by fire and the mine is now (October 10th) lying idle.

The Saturday Night, located at Basin, is owned and operated by the Cataract Mining and Development Company, E. A. Gustafson, Manager, Superintendent and Foreman. Ten miners and two topmen are employed. The mine is operated by a single compartment shaft 115 feet deep. A tunnel 300 feet in length both timbered with stulls. Water-wheel, 1-2 in. steel rope and bucket are used for hoisting. There are two exits, ventilation is good, character of ore gold and silver smelting.

Note—The shaft of this mine is located about 150 feet from Cataract Creek. Water is conducted from the creek by flume to a large wheel which controls the drum on which the rope for hoisting is neatly handled by levers, throwing the rope one way or the other thus applying or releasing the friction. It is the cheapest hoisting power I have seen in the state.

The Chile Mine, located at Sappington, owned by Raymond and Maginnis, operated by Masters & Co., who are also the managing officials, employs nine miners and three topmen. The mine is operated by single compartment shaft 120 feet deep, and a 400-foot tunnel, both timbered with stulls. A 10x12 Ledgerwood engine, 7-8 steel rope and bucket are used in hoisting. There are two exits, ventilation is fair and character of ore free gold.

The Alta, located at Alta, owned and operated by the H. & L. S. & R. Co., O. R. Allen, Manager, L. D. Davis, Supt., Ole Lewis, Foreman, employs 160 miners and 15 topmen. The main shaft is three compartment and 1,500 feet deep. The tunnel is 4,000 feet long. Stulls, stringers and square sets are used in timbering. An electric engine with 7-8 inch Lark steel rope and cages are used in hoisting. Safety appliances tested each day, are in place. There are six exits and ventilation is excellent. Character of ore silver and lead, smelting.

Note—The shaft in this mine starts from the 8th level, or tunnel, at a distance of 1,500 in from the surface. There are four tunnels, known as “two,” “four,” “six” and “eight.” Number eight has the greatest length.

The Hope Mine, located at Lump City, owned by Grobe, Henton & Co., Jacob Grobe, Supt. and Manager, Joe Baldwin, Foreman, employs five miners and five topmen. The shaft is two compartment, 200 feet deep and timbered with stulls. Hoisting is done with a 6x8 Ledgerwood engine, 5-8 inch steel rope and bucket. There is but one exit and the character of ore is silver, lead and copper.

Note—At a distance of 67 feet from the main shaft, a second shaft has been sunk 107 feet. As soon as drifts running east are completed and connections made, raises will be put through thus furnishing two means of exit and better ventilation.

The Little Alma, located at Lump City, owned and operated by Babcock, Treacy & Co., Frank Murray Supt. and Manager, D. D. Hodnett, Foreman, employs 12 miners and 10 topmen. The shaft is double compartment, 260 feet deep and timbered with square sets and stulls. Hoisting is done with a Fraser and Chalmers, friction engine, 3-4 inch steel rope and bucket. There is but one exit and the character of ore is silver and lead.

Note—At a distance of 50 feet east of shaft on the 200 level a raise is being put through which when completed will furnish an extra means for exit and better ventilation.

The Free Coinage, located at Lump City, owned and operated by Prescott and Smith, Joe Smith Gen'l Manager, employs nine miners and six topmen. The shaft is double compartment, 200 feet deep and timbered with stulls. A 9x12 Fraser and Chalmers Engine, 5-8 inch steel rope and bucket are used in hoisting. There are two exits, ventilation is fair, character of ore silver.

Note—A raise has been put through from the 75-foot level to the surface and another from the west drift on the 150-foot level to connect with the first raise is in course of construction. The completion will make the mine safer so far as exits and ventilation is concerned.

The Iron Cap, located at Lump City, owned and operated by O. R. Allen & Co., O. R. Allen, Superintendent and General Manager, N. Stewart, Foreman, employs 6 miners and 2 topmen. The shaft is two compartment, timbered with stulls and is 200 feet deep.

Hoisting is done with a 6x8 Friction Engine 5-8 inch steel rope and bucket. There is but one exit and ventilation is fair. Character of ore silver.

The Little Nell, located at Lump, owned and operated by C. H. Head & Co., G. E. Price, Superintendent and Manager, employs eighteen miners and eighteen topmen. The main shaft is 300 feet deep, two compartment and timbered with stulls and square sets. A 7x10 Friction Engine, 3-4 inch steel rope and bucket are used in hoisting. There are two exits but the ventilation is not good. The character of ore is silver.

Note—A shaft 100 feet deep has been sunk 300 feet east of the main shaft. A drift is being run from the 250 foot level and when the proper distance is made a raise will be put through to connect with the shaft first mentioned thereby giving better ventilation.

The H. & H., located at Winston, owned and operated by C. N. Clark & Co., H. P. Clark, Superintendent and Manager, David Ballentine, Foreman, employs 12 miners and 6 topmen. The mine is worked through a double compartment shaft 300 feet deep and by tunnel 3,000 feet in length. Both are timbered with square sets and stulls. The mode of hoist is by steam engine, steel rope and double-decked cages. The number of exits is eight, character of ore smelting gold.

Note—1,400 feet west of main shaft in No. 4 level a shaft 100 feet deep has been sunk. This gives a development of 600 feet from surface.

The Liverpool, located at Lump City, owned and operated by Merrill & Miller, T. G. Merrill, Superintendent and Manager, Alex Swan, Foreman, employs 22 miners and 13 topmen. The main shaft is double compartment, 400 feet deep, timbered with square sets and stulls. Hoisting is done with a Griffith & Wedge engine, 3-4 inch steel rope and cages. Safety ap-

pliances, tested every week, are in place. There are 3 places of exit, ventilation is fair character of ore silver and lead.

The King Solomon, located at Clancy, owned and operated by the Clancy Mining Co., Timothy Wilcox, Superintendent and Manager, Thos. Gill, Foreman, employs 8 miners and two topmen. The shaft is 200 feet deep, two compartment and is timbered with square sets. Hoisting is done by whim power, 5-8 inch steel rope and bucket. There is but one exit and ventilation is very poor. Character of ore silver smelting.

Note—There being only one exit by the shaft the ventilation is necessarily very poor. There is also danger from fire and scarcely any means for extinguishing it should one take place. The manager, however, said to me that he would provide all necessary means of exit and improve the ventilation as soon as possible. I advised him that it should be done at once.

The Dan Tucker, located at Clancy, owned by Redding, operated by Gourley & Co., James Gourley, Sup't and Manager, D. D. McMillan, Foreman, employs four miners and one topman. The mine is developed by shaft, two compartment, 268 feet deep and a tunnel 80 feet in length. Both are timbered by stulls. An 8x12 Link motion engine, 3-4 inch steel rope and bucket are used in hoisting. There are two exits from 40 foot level to surface and ventilation is good. Character of ore silver smelting.

Note—The Dan Tucker is under lease and bond at the present time to Messrs. Gourley, Smith, Bell & Co.

The Minah Mine, located at Wickes, owned by the Minah Consolidated Mining Company of London, England, operated by Hersen & Bian, H. L. Simmons, Supt. and Manager, L. P. Higman, Foreman, employs five miners and two laborers underground and two topmen. This mine is developed and operated by tunnels the greatest length being 2,500 feet. Timbering is done with square sets and stulls. The character of ore is silver and lead and is taken out by cars. There are 4 exits and ventilation is good. Tunnel No. 1 is 1,700 feet; No. 2, 1,700; No. 3, 1,700; and No. 4, 2,500 feet in length.

DEER LODGE COUNTY.

The Penobscot, owned and operated by Longmaid & Bro., Frank Longmaid, Supt. and Manager, Henry Northey, Foreman, employs 12 miners and 6 topmen. The main shaft is 500 feet deep, two compartment and timbered with stulls. A 16x24 Fraser and Chalmers engine, 7-8 inch steel rope and skip are used in hoisting. There are five exits and the character of ore is free gold.

Note—This is the famous Penobscot mine once owned and operated by Nate Vestal. I think the mine has been closed down and abandoned, all work having ceased since I inspected the property.

The Bald Butte, located at Bald Butte, owned and operated by the Bald Butte Mining Company, B. H. Tatem, Manager, Thos. Sincox, Superintendent, J. R. Sincox, Foreman, employs 24 miners and 3 topmen. The shaft is single compartment, 260 feet deep and is timbered with stulls. There is also a tunnel 1,200 feet long also timbered with stulls. Mules and cars are used in taking out ore. There are 4 exits and ventilation is good. Character of ore free gold.

Note—1,000 feet from the mouth in the main tunnel, a branch tunnel 400 feet long has been run in a northerly direction and on a lead which branches off from the main lead.

————— located at ————— owned and operated by Murray Bros., H. P. Murray, Supt. and Gen'l Manager, Owen Byrnes, Foreman, employs nine miners and three topmen. The mine is worked through a single compartment shaft 300 feet deep and a tunnel 225 feet in length, both timbered with stulls. Hoisting is done with a whim, 3-4 inch steel rope and skip. There are three exits, ventilation is fair, character of ore free gold.

MEAGHER COUNTY.

The Broadwater, located at Neihart, owned and operated by W. J. Clark and J. E. Searls, W. J. Clark, Manager, John McCovey, Supt. and Foreman, employs 65 miners and 10 topmen. The depth of the main two compartment shaft is 150

feet and length of main tunnel 2,100 feet. Stulls and square sets are used in timbering. Hoisting is done by one inch steel rope and bucket. There are 5 exits, ventilation is good, character of ore silver.

Note—The Broadwater is operated, principally, through three tunnels the length of which is 2,100, 1,950, and 1,475, respectively. Ore has been encountered in all the tunnels.

The Galt Mine, located at Neihart, owned and operated by McAssey & Co., John McAssey, Manager, Andrew Nelson, Supt. and Foreman, employs 25 miners and two topmen. The mine is operated by a two compartment shaft 150 feet deep and by tunnels. Timbering is done with square sets and stulls. A Ledgerwood 6x10 engine, 7-8 inch steel rope and bucket are used in hoisting. The character of ore is silver, there are 4 exits and ventilation is good.

Note—Tunnel No. 1 is in a distance of 1,015 feet. No. 2 is in 470 feet and is connected with No. 1 in three places. At a distance of 200 feet from mouth of tunnel No. 1 an upraise of 86 feet connects with the surface.

The Florence Mine, located at Neihart, owned and operated by A. M. Hersey, R. T. Wight, et al, Daniel Lening, Gen'l Manager, employs 20 miners and 3 topmen. The double compartment shaft is 245 feet deep, the tunnel 550 feet in length. Stulls are used in timbering. A 6x10 Ledgerwood engine, 5-8 inch steel rope and bucket are used in hoisting. There are two exits and ventilation is good.

Note—The shaft of the Florence Mine is located in the tunnel 147 feet from the mouth.

MISSOULA COUNTY.

The Iron Mountain, owned and operated by the Iron Mountain Company, Wm. Coyne, Superintendent, Robert Angus, Foreman, employs from 25 to 35 miners and 21 laborers underground and three topmen. The main shaft is two and three compartment 700 feet deep. 200 feet has been sunk this year. Half sets are used in timbering. Character of ore silver-lead. Double-decked cages, handled by a 1-inch Roeblings steel rope,

14x18 double cylinder Ledgerwood engine are used in hoisting. The mine is also developed by tunnels from which there are two exits and ventilation is perfect.

Note—The mine is worked from stations 800 feet from the main tunnel and 700 feet from apex of vein.

BEAVERHEAD COUNTY.

The Cleve, located near Glendale, Beaverhead County, owned and operated by the Hecla Consolidated Mining Company, H. Knippenberg, Manager, S. A. Barbour, Superintendent, John Hull, Foreman, employs 21 miners underground and four topmen. The incline shaft is single compartment, 1,425 feet deep and timbered with square sets, character of ore silver and lead. A manilla rope 1 1-4 inches is used in hoisting and is handled by a Fraser & Chalmers engine. There are two exits and ventilation is good.

The Atlantis Mine, located near Trapper, and owned and operated by the Hecla Consolidated Mining Company, H. Knippenberg, Manager, S. A. Barbour, Supt., D. H. McMaster, Foreman, employs 60 miners below and five topmen. The mine is operated by tunnels 1,200 feet in length, timbered with stulls, character of ore silver and lead. The cars are handled by a 1 1-4 inch manilla rope and Ledgerwood friction engine. One engineer is employed. There are six exits and ventilation is good.

LEWIS AND CLARKE COUNTY.

The Fremont and Jay Gould, located at Jay Gould, owned and operated by the Fremont Mining Company, Wallace Corbett, Supt. and Gen'l Manager, Anthony Griza, Foreman, employs 35 miners and 2 topmen. The property is worked through tunnel, 2,200 feet in length timbered with stulls and square sets. There are six exits, ventilation is good and character of ore free gold.

Note—This mine has a second tunnel 1,200 feet in length from which ore is also being taken. The Jay Gould is located about 1,500 feet north of the Hubbard, but at present (July 12) is not being worked.

The Piegan, located at Gloster, owned and operated by the Piegan Mining and Milling Company, J. A. Stemple, Manager, William S. Stemple, Superintendent and Foreman, employs 10 miners and one topman. It is operated by tunnels, Number "one" is in 500 feet and number "two" has attained a length of 800 feet. There are four exits, ventilation is fair and the character of ore is free gold.

The Drum Lummon, located at Marysville, owned and operated by the Montana Mining Co., Limited, R. T. Bayliss, Gen'l Manager, Alex Burrell, Supt., Isaac Warren, Foreman, employs 139 miners and 67 topmen. The main shaft is 3 compartment, 1,600 feet deep, The length of main tunnel is 1,230 feet. Stulls and square sets are used in timbering. Character of ore free gold and silver. Single deck cages, 1-2x4 1-2 inch steel rope handled by Fraser & Chalmers Corliss Engine are used in hoisting. Safety appliances, tested each week, are in place; there are four exits and ventilation is good.

Note—A Riedler, underground pump, 3 3-4 in, 5 1-4 inx24 in differential duplex with 16 in. and 25x24 in. cross compound condensing Corliss engine are in use, against a head of 1,200 feet or from 1,600 to the 400. This pump is located at the 1,600 foot level and was set by Master Mechanic Moreland. There are in place electric, single stroke signal bells connected directly with bell cords with levers at each station.

There are also in place chair indicators operated by electric batteries. The figures of each station are shown on a red disc by a white drop, the drop being exposed through a slot in a white dial. Miller fire extinguishers to be used in case of fire, are in place at all stations and in all dry stopes.

COAL.

—
CASCADE COUNTY.

The Sand Coulee Mine, owned and operated by the Sand Coulee Coal Mining Company, H. Burrell, Supt. and Manager, Thos. Lindsay, Pit-boss works 350 miners and 500 other employes. The mine is opened by drifts aggregating 7,600 feet in length. Ventilation is furnished by fans which supply a volume of 200 cubic feet of air per minute for each man and 950 cubic feet for each mule.

There are no explosive gases, The character of coal is semi-bituminous. The mine yields 2,500 tons per day and has a capacity of 3,000 tons. Murphy fans are in use and have a capacity of 135,000 cubic feet of air per minute.

Castner Coal and Coke Co., located at Belt, owned and operated by the Castner Coal and Coke Co., Marcus Daly, Manager, J. J. Kinney, Supt., John Haynes and Peter Breen, Pit Bosses, employs 600 miners and 300 other men in different capacities. The mine is opened by levels aggregating 1,800 feet.

Ventilation is furnished by an Autumway, Iowa Co's 20 foot fan which supplies an air current of 300 cubic feet a minute per man and 800 feet per horse. The capacity of the fan is 98,000 cubic feet per minute. 1,600 tons of semi-bituminous coal is produced daily while the mine has a capacity of 2,000 tons. 80 tons of Coke is manufactured every day. There are one hundred ovens ready for operation and eighty are in constant use.

Note—These mines are under the direct supervision of Sup't J. J. Kinney, whose large experience eminently qualifies him for the important position he occupies. His work is systematically laid out and executed. Every adjunct necessary to the safety and health of the men is carefully looked after and an abundant supply of air is furnished for man and beast.

CARBON COUNTY.

The Rocky Fork Mine, located at Red Lodge, Carbon County, owned and operated by the Rocky Fork Coal Co., J. M. Fox, Sup't and Manager, Martin Wood, Foreman and Pit Boss, work 280 miners and 25 other employes. The character of coal is bituminous and is taken from drifts and stopes which have been worked an aggregated distance of 41 1-4 miles. The greatest distance in of any one opening is 1 3-4 of a miles. The mine has a capacity of 1,400 tons per day but produces only 800 tons. There are no explosive gases. Good ventilation is furnished by fans.

GALLATIN COUNTY.

The Timberline, located at Timberline, owned by the Northern Pacific Railroad Co., operated by C. W. Hoffman, G. B. Hoffman, Manager, James Anderson, Superintendent, Thomas Atherton, Pit Boss, John Rufley, Fire Boss, works ninety-two miners and thirty-eight other employes. The main shaft is an incline, 900 feet deep. The mine has a productive capacity of 225 tons of coal per day and produces regularly 200 tons. Explosive gases are apparent in the mine. There are two exits and ventilation is good. The supply of air is furnished by Crawford & McCrimmon fans to the amount of 150 cubic feet per minute to each man. The character of coal is bituminous.

Note—"No. 2" is situated about one mile from "No. 3" mine and has been opened since the issue of my last annual report. No. 3 is ventilated by an air shaft. This mine is opened by tunnel and no explosive gases have been discovered. At No. 2 mine explosive gases are reported as soon as detected.

The Chestnut, located at Chestnut, owned by the Bozeman Coal Co., operated by Johnson & McCarthy, J. C. McCarthy, Sup't and Manager, John Smith, Pit Boss, employs 75 miners and five other men. The mine is opened by tunnel, now in 2,000 feet. The capacity of mine is 400 tons and 240 tons of

bituminous coal is produced daily. There are three exits and ventilation is good. The W. E. Cole, 8 foot fans are in use and supply 200 cubic feet of air to each man, per minute. Explosive gases have been detected.

PARK COUNTY.

The Montana Coal and Coke Co., located at Horr, owned and operated by the Montana Coal and Coke Co., J. H. Conrad, Manager, B. F. Lloyd, Sup't, Chas. Beensford, Pit Boss, Robt. Fluckherdt, Fire Boss, employs 96 miners and 12 other men. The mine is opened by drift and is now in a distance of 1,800 feet. The mine is ventilated by furnace and air shaft. Capacity of mine 500 tons. Production 200 tons per day and 50 tons of coke are made from 51 ovens. The character of coal is bituminous. There are 3 exits.

SECOND ANNUAL REPORT
OF
DEPUTY STATE MINE INSPECTOR
JOHN H. MILES.

COL. C. S. SHOEMAKER,

State Mine Inspector, Helena, Montana:

Sir:—I herewith submit my Second Annual Report for the fiscal year ending November 30th, 1895.

It embraces all the fatal and non-fatal accidents which have come to my knowledge and within the limits of my jurisdiction

My suggestions are numerous and lengthy, but they are made after careful consideration and with firm conviction that, if acted upon, they will prove of great benefit.

The list of mines which I have inspected is also submitted.

Trusting the report will be acceptable to you and meet with the approval of His Excellency, the Governor, I have the honor to be,

Your obedient servant,

JOHN H. MILES.

Deputy State Mine Inspector.

Butte, December 1st, 1895.

GENERAL REMARKS.

In every mine which I have inspected I find the State Code of Signals in permanent use. The managers, without exception, pronounce them the best ever introduced. Engineers and miners are also better satisfied and appreciate the fact that they have but this one Code to obey continually—that in changing from one mine to another they do not have to learn something new in this line.

While there is room for much more improvement I desire to say that the mines of Silver Bow County are being placed in the best possible shape to protect the health and lives of the men who are employed. There is less carelessness on the part of the employes because of the rigid enforcement of certain rules which have been adopted. The great mines of this county are mostly officered by men of experience and sound judgment who look after the interest of the men as well as the welfare of the companies they represent.

It would show a lack of appreciation on my part did I send forth this report without mentioning my sense of gratitude to those who have lent their assistance in very many ways during my official visits to the mines and to those who have furnished me with information or otherwise aided, I wish to extend my sincere thanks.

CHANGES.

Since the report of many of the mines was written there have been important changes made in some managements and among a number of minor officials.

Capt. C. H. Palmer of the Butte and Boston, has been succeeded by Thomas Couch of the Boston and Montana. Mr. Couch is now General Manager of both companies.

Josiah Gilbert, formerly Sup't of the Leonard and East and West Colusa, has succeeded James Hoatson in the B. & B. properties, and is now Assistant Gen'l Manager of the East and West Colusa, Leonard, Atlantic, Silver Bow Nos. 1 and 2, and East and West Gray Rock.

Richard Dawe, formerly foreman of the Mountain View and Pennsylvania, has been promoted to the Superintendency of the Mountain View, Pennsylvania, Moose and Blue Jay.

W. H. Hall, Supt. of the Poulin, tendered his resignation and is succeeded by C. F. Booth.

Foreman Hagin of the Gold Hill has succeeded John O'Neil as Superintendent and Foreman of the High Ore.

FINGER BOARDS.

I would again call attention to the necessity for a law requiring that finger-boards, indicating the direction to different exits from the mine, should be placed at points or places in each level where they may be readily seen by all employees or others who may have occasion to escape from the mine in case of danger by flood or fire. The Gagnon was the first mine to introduce this feature. Since then the Mountain View has been supplied with finger boards which indicate every exit and also the places where powder is stored. The Silver Bow Mines Nos. 1 and 2 also has in place fifty-six of these essential guides.

TIMBERING.

General throughout the mines of Silver Bow County, where my work as Deputy Mine Inspector has principally been done, is an improvement on that of past years. More substantial timbers are used and greater care taken in putting them in place. The result is a great saving in expense and decided gain in profit as miners generally appreciate the increased safety of places where they must work and consequently perform more actual labor than if their life was continually jeopardized by insecure or frail timbers.

I have noticed that nearly every cave in the mines (see non-fatal accidents) has occurred in the "face." This proves that more care has been exercised in keeping the timbering close up with mining work.

CALL BELLS.

I have given careful consideration to the necessity of having call-bells introduced in all mines over 200 feet deep and deem their introduction advisable. These call-bells should be in place with separate indicators, in every engine room.

The signal rope for the call bell should be in the pump shaft where it could be easily reached from every station. The object of the call bell is for the exclusive use of any one who may want the cage at any particular station.

It is a well-known rule in every mine that the station tender alone has authority to ring the signal bell when the cage is in operation. To illustrate the use of the call bell I will explain. Suppose the cage to be in use hoisting ore from the 400 level. A man at the 600 wants the cage to convey him up or down to another level. He dare not touch the bell cord in the hoisting shaft because he is ignorant of what is going on at the station where the cage is hanging.

The engineer is also ignorant of what is being done below and only implicitly obeys the bells as he hears them.

With a call bell the engineer would know that the cage was wanted at some other place than where it is hanging.

He waits until the cage is sent up by the station tender and after it is unloaded he at once sends it to the one wanting it. When this man is through with the cage he again rings the call bell with proper signal and the engineer hoists or lowers the cage to the station where it is needed. The use of the call bell would prevent many delays and have a tendency to expedite work.

POWDER.

I think the Powder Bill passed by the last legislature could be improved upon very materially. As it stands it answers certain purposes so far as it goes. The bill or law should be added to so that it will cover the handling and storage of powder in mines. Under existing conditions every mine has its own mode or way of caring for or handling explosives under-

ground, and I find some of them are far from being conducive to the safety of mine employes or others who may be in the workings beneath the surface.

IMPORTANT NOTICES.

Notice should be posted at every place where powder is stored, either in the mine or on the surface, that every one in its vicinity may know of its proximity.

I would suggest that notice be posted at all shafts where cages are in use, requiring all men to take firm hold of the safety bars while going down or coming up on the cage, under penalty of dismissal in case of failure to comply with this rule.

I would also suggest that notice be posted on all gallows frames and at each station prohibiting men from riding on loaded buckets, skips and cages, or jumping on or off buckets, skips or cages when in motion, under penalty of dismissal for violation of the rule.

FATAL ACCIDENTS.

Name.	Nationality.	Date.	Mine.	County.	Cause.
1 Samuel Pollard	English.	Dec. 2, 1894	East Grey Rock	Silver Bow	Blast
2 M. L. Purcell	Irish	Dec. 10, 1894	Green Mountain	"	Heart disease.
3 Richard Stephens	English	Jan. 7, 1895	West Colusa	"	Fell down shaft
4 Frank Rowe	"	Jan. 27, 1895	Gambetta	"	Blast
5 John L. Hughes	Irish	Mar. 24, 1895	Mountain Con.	"	Cave
6 Thos. H. Treverthick	English	Apr. 17, 1895	West Hibernia	"	"
7 A. D. McDonald	Scotch	May 12, 1895	Rarus	"	Fell off cage.
8 Jacomo Mabritto	Italian	"	"	"	Crushed between cage and wall plate.
9 Chas. A. Simmons	American	May 14, 1895	Gagnon	"	Fell off the skip.
10 John Barry	Irish	May 18, 1895	Anaconda	"	Blast
11 Stephen J. Murphy	"	May 25, 1895	Hope	Jefferson	Cave.
12 Thomas Wall	"	May 26, 1895	Never Sweat	Silver Bow	Slivers from guide pierced his side.
13 Perry E. Mead	American	Aug. 28, 1895	Eugenia	Beaverhead	Drowned
14 Ferdinand Erniech	American	Sept. 1, 1895	Never Sweat	"	Crushed by cave.
15 Geo. A. Weaver	American	Oct. 2, 1895	St. Lawrence	"	Fell down shaft with loaded cage
16 John McArthur	Irish	Oct. 18, 1895	High Ore	"	Struck on head by cage
17 Thos. H. Sandow	English	Oct. 23, 1895	Mountain View	"	Skull broken, fainted going down shaft
18 James Murphy	Irish	Nov. 5, 1895	Clipper	"	Fell down shaft
19 David Magor	English	Nov. 8, 1895	Mountain Chief	"	Explosion
20 Chas. McGann	Irish	Nov. 11, 1895	Poulin	"	Crushed between cage and timbers
21 Ben. Armstrong	American	Nov. 12, 1895	Golden Charlot	"	Fell down shaft

NON-FATAL ACCIDENTS.

1 Henry Nankivell	English	Dec. 14, 1894	Parrot	Silver Bow	Legs broken and body bruised
2 W. H. Thomas	"	Feb. 11, 1895	Glengary	"	Badly bruised from falling down chute
3 Nick Termbullock	"	"	Nettle	"	Severely bruised
4 Jerry Connell	Irish	Feb. 28, 1895	Mountain Con.	"	Leg broken
5 Pat Butler	"	Apr. 6, 1895	St. Lawrence	"	Badly bruised
6 Sam'l Coombs	English	"	Lone Pine	Beaverhead	Eyes blown out and other injuries
7 C. H. Chaim	"	June 2, 1895	Belle	Silver Bow	Leg broken by cave.
8 Robt. O'Malley	Irish	June 25, 1895	Anaconda	"	Leg broken by cave, injured otherwise
9 Mike Hughes	"	June 26, 1895	Washoe	"	Leg broken by cave.
10 John C. Kelley	"	July 5, 1895	High Ore	"	Badly bruised by cave
11 Tim Sullivan	"	July 9, 1895	St. Lawrence	"	Legs broken by cave
12 Jacob Hoar	English	July 27, 1895	Silver Bow No. 1	"	Bruised by cage while crossing shaft.
13 W. H. Foster	American	Sept. 1, 1895	Silver Bow No. 1	"	Badly bruised by cave.
14 Jerry T. Hanley	Irish	Sept. 30, 1895	Mountain Con. Shaft 2	"	Badly bruised by cave.

FATAL ACCIDENTS.

SILVER BOW COUNTY.

Samuel Pollard. In the east drift, north cross-cut, 1,200 foot level of the East Grey Rock Mine, located at Centerville, on the morning of December 2d, Samuel Pollard was instantly killed and John Stone, his working partner was horribly lacerated about the face and breast. A hole had been drilled in the south wall, a stick of powder placed therein and Pollard was attempting to force it to the bottom, using a hammer handle for that purpose when the powder exploded, threw Pollard across the drift, wedged his body between the timber and opposite wall; while Stone received a portion of the flying rock in the face, smashing his nose, tearing out one eye and ruining the sight of the other, breaking the lower jaw, bruising the forehead and upper part of the body. In visiting the place very soon after the accident I noticed the tamping bar and scraper standing side of the wall, the pick and shovel on the ground out of the way, and on one side of the drift a piece of fuse 5 feet long with a fresh cap on one end. After the accident Stone was attempting to crawl out of the drift on his hands and knees when he was met by Frank Rowe to whom he related the particulars of the accident and which he afterwards repeated to others. The first and second stick of powder used in deep holes is often forced down in this way and during my long experience as a practical miner I have never heard or known of an explosion taking place from the simple pressure necessary to get the powder to a sufficient depth for proper results when ready to blast. It is barely possible a rough or jagged piece of rock may have protuded from a crack inside the drill hole and the powder was exploded by friction, or again the powder may have stuck in the hole and Pollard attempted to force it down with blows instead of by steady pressure. The actual cause of the explosion will never be known.

M. L. Purcell, died suddenly, December 10th, 1894, on the 4th floor of the 1,000 foot level of the Green Mountain Mine from Neuralgia of the heart. He was a man 50 years of age and had been suffering from some complicated heart trouble for two or three years. The evidence given before a Coroners jury proved that the air where Purcell was at work was good. The physician who had been attending the deceased for some time testified that the shock occasioned by the blast which occurred just before Purcell's death may have affected the case and hastened death.

Richard Stephens. On January 7th, 1895, at the 500 foot level of the West Colusa Mine, Meaderville, Richard Stephens met with an accident somewhat out of the usual order of mining casualties and which resulted fatally.

He had loaded a truck with timbers taken from the cage and attempted to move it along the track and into the level. Placing his shoulder against the timber he crowded his weight and strength upon the load when suddenly the end raised up. This naturally brought the further ends so low that a strong pressure was brought to bear on the end of the truck opposite Stephens and the wheels began turning towards him.

The truck came back rapidly and with such force that he was unable to stop its speed. The result was that Stephens was pushed to the end of the track and off into the shaft. Both man and car fell to the bottom, a distance of 100 feet. The body was taken from the shaft in a badly crushed and mutilated condition.

Frank Rowe. At the Leggat Gambetta Mine, Meaderville, on the night of January 27th, 1895, Frank Rowe was probably instantly killed in an upraise between the 600 and 500 foot level. Work was being prosecuted from above by a miner named Haase, while Rowe was working upward. Both men had an understanding with each other as to their shots, the distance between them being but a few feet. Rowe had fired what he supposed would be his last shot before breaking through and gone below out of danger from the blast. Haase was longer in preparing his shot than had been calculated upon. Having waited a reasonable length of time it is presumed that Rowe,

thinking Haase had also fired his shot and being anxious to know the result, went into the stope again. Rowe returned too quickly and arrived at the place just as Haase's shot went off; at least such is supposed to be the case as Rowe's body was found a short time after badly mutilated and with life extinct.

James L. Hughes. On March 24th, at the Mountain Con. Mine, Centerville, Jas. L. Hughes, met with an accident which resulted in death at his residence, Anaconda Road on the 28th inst., four days later. Hughes and Jno. Downey had gone to work in the east drift of the 900 level. They sounded the ground thoroughly after which Downey started for the station to get some tools. These he procured from the tool-boy whom he met near the station and returned to find Hughes partially buried beneath a mass of waste and talcy matter which had fallen from the side of the drift. The cave was caused by what is termed in miner's parlance a "slip" and weighed about 4,800 pounds. Hughes sustained internal injuries, general bruises and had several bones broken, but he stated before death relieved him from the great suffering that "from all appearances it was as safe a place as ever I worked in."

Thomas H. Trevithick. On the night of April 17th, in the west drift of the 150 foot level of the West Hibernia Mine, near Burlington, Thos. H. Trevithick was severely injured by a fall of dirt from the hanging wall. In visiting the place of accident I learned that the cave or fall of ground was caused by an unknown soapy seam which could not possibly have been discovered before the fall. I found the timbering close up and well placed. The work throughout the mine had been carefully done. Trevithick was removed to his residence in Burlington where he died the following morning.

Jacomo Mabritto. A. D. McDonald. On Sunday morning, May 12th, while ascending the shaft of the Rarus Mine, from the 450 level Jacomo Mabritto, after the cage had reached a point about 200 feet from the surface, slipped quietly down from a standing position and in a moment after, judging from the sudden jar of the cage, he must have been forced between the cage and wall plates, instantly killed and dropped to the bottom of the shaft.

A. D. ("Sandy") McDonald was either pulled down by Mabritto, or possibly pushed over when the latter went down, and met his death between the cage and wall plate as his head and shoulders were badly crushed and some of his ribs broken.

A third man, William Bowen, who was on the cage was also knocked down by the fall of either Mabritto or McDonald and sustained a severe fracture of the leg.

Joseph Walters, the station tender, who was riding up on the cage at the time says all the men had been sent up from 500 and 450 except Mabritto who was left at the latter station. The cage returned, when Mabritto and Walters got aboard, and went to the 400 where McDonald and Bowen got on. The cage was rung to the surface when the accident as described above took place. Walters says Mabritto was facing and rubbing against him when he felt the man's body going down. Walters says he grabbed hold of Mabritto's jumpers but it gave way and he soon struck the wall plate. Mabritto and McDonald faced Walters and Bowen and the men were not in the least crowded. When Mabritto fell he uttered no sound whatever, nor did McDonald. The cage only ran up six or seven feet after Mabritto fell and there stopped. A light was procured and McDonald's body was taken from under the wall plate. Walters and Bowen both say that none of the men had hold of the safety bar while the cage was going up. I found the cage and timbering of shaft in good working order when I made an examination an hour or two after the accident.

Charles A. Simmons. At the Gagnon Mine, Butte, between one and two o'clock, May 14, Chas. A. Simmons was instantly killed in the main shaft. He went down from the 700 foot level to the 800 to secure his candlestick which had been left where he was working in the morning. Other men were on the skip going to the 900. After receiving the candlestick from some party at the 800 Mr. Simmons concluded he would go on down to the 900 and return after his fellow workmen had landed. When ready to start back he asked as to the proper signals for going up to the 700. He was told by Wm. Bartle, "one and three." Standing on the edge of the skip he leaned over, seized the bell rope with both hands and pulled it down

so far that his body was bent over. His one bell was thus given to the engineer and in the course of 8 or 10 seconds and before another signal was given, the skip started upwards. Simmons had not yet regained an upright position hence when the skip raised a short distance his head came in contact with a wall plate, Simmons was knocked off the skip and fell to the 1,300 level a distance of 400 feet where the body was subsequently found terribly bruised and the head literally smashed to pieces. From the miners who witnessed the accident and who swore to their statements before a Coroner's jury it was learned that Mr. Simmons was unfamiliar with the signals and not accustomed to ringing the bell. He was over cautious on this occasion and altogether too slow in giving the three bells which should have followed the first bell. Hence the engineer presumed but one bell was going to be rung and that he should hoist the empty cage to the surface.

John Barry. At 3:30 A. M., May 18th, on the 7th floor east, 800 level, Anaconda Mine, Butte, John Barry was almost instantly killed by a blast. Barry was a shift boss and had been instructed by the superintendent and foreman to open up a new raise and prepare it for practical use. It is only presumed that he had gone into the raise from the 700 level with a view of inspecting the ground and laying out the work to be done. Following down the raise he came to the place on the 7th floor of the 800 where two shots had just been put in. It appears that the miners who charged the holes knew nothing of this unused raise, but when ready the men went in different directions, after lighting the snuffs and giving the signal for blasting so that the entrances from the 700 and 800 were properly guarded. A very few minutes after the explosion Pat Deavney and Frank Finney returned to the scene of their labors and were startled upon hearing the groans of some one who was apparently dying. Looking closely to learn who had been injured they found the body of John Barry behind some timbers where it had been thrown by the blasts. He was just alive and only lived a few moments. In approaching the place of accident Barry was a little too late to hear the signal always given before blasting and must have reached the spot just as the fire

in the fuse reached the caps. As the new raise had never been used and was unknown to the men at work there no blame was attached to any one.

Stephen J. Murphy. On May 25th, this unfortunate miner lost his life in the Hope Mine at Basin, Jefferson County, while returning to his work, after dinner, he had to pass through the 120, or intermediate level. He had entered the level but a short distance when about 10 tons of the hanging wall caved off. Murphy was, at the time, directly underneath the fatal rock as it fell and was caught by the awful weight and crushed to the floor. When recovered the remains were almost beyond recognition. I was not notified of this accident until three days subsequent to its happening. Upon my arrival I found the place of accident was being timbered. I made a very close examination of the mine and found it in decidedly bad shape. It was poorly timbered and unsafe in many respects. I notified Superintendent Fletcher and foreman Martin Buckly of the needed improvements and called their attention to the unsafe condition of the mine generally. They promised to have it properly timbered as soon as possible. The published reports of the accident state that after listening to the evidence of Martin Buckly, and three miners who had been working near the scene of accident, the Coroner's jury "rendered a verdict exonerating the Hope Mining Co., from all blame whatsoever." In my opinion the jury should have visited the mine, inspected the premises carefully and thus been enabled to render a verdict more in accordance with the facts rather than in accordance with evidence given by parties interested.

Thomas Wall. On Sunday, May 26th, while descending the shaft of the Never Sweat Mine, Butte, Thomas Wall unfortunately stood too near the edge of the cage and so close to the guides that his clothing caught the sharp edge of some slivers on one of the guides. The slivers were torn from the guide, passed through the clothing, penetrated the skin and were forced upwards between the ribs and outside flesh, a distance of five inches. Surgical examination proved this would not necessarily have caused death. A possibility exists that another sliver may have also penetrated the body, turned in

its upward course, entered the internal cavity and caused such internal hemorrhage as would have resulted in death. The testimony of Surgical experts showed that profound shock to the system was caused by the entering of the slivers which were taken from underneath the skin. Wall died at his residence the day following the accident.

Perry E. Mead. At the Eugenia Mine, Bannack, on the 28th of August, Perry E. Mead lost his life, probably through a mistake. The mine is a very wet one and is worked as a placer. Mead was working as a helper to Charles Peterson who was drifting in the breast of the tunnel. A new set of timbers had been put in close up to the face when Peterson prepared to take out a boulder. He requested Mead to drive in some lagging when he, Peterson, took out the boulder.

Upon removing the boulder Peterson discovered there was nothing back of it but mud and water. He called for a breast board to cover the space occupied previously by the boulder, but Mead handed him a piece of 2x4 lagging 5 feet long and which Peterson could not force into place to be effective. The mud and water began forcing its way into the drift when Peterson threw his body against the hole, braced his feet, seized the lagging over head and while holding back the incoming mud and water called to Mead to "run," to "save himself." Mead ran towards the shaft and when near it and opposite the west crosscut yelled "Oh Boys! Oh Boys!" Thomas Holtzman who was in the west drift heard the alarm and pushed his car down to the main tunnel. He saw no one there but saw the water rising and went on out to the shaft. Peterson, after maintaining his perilous position for five minutes let go his hold and ran for the shaft. In his testimony before the Coroner's jury he says he was followed by 2 1-2 feet of mud and water. He found the car and loaded bucket on it at the mouth of the west drift. These he passed enroute to the shaft. He says the force of water behind him was so great that it rolled the car and bucket along the tunnel after him and overtook him as he began climbing up the shaft which he ascended for a short distance and remained till the bulk of the water had passed below when he went down and waded back three sets and

called to see if any of the men were in the drifts. Getting no answer he went on top and was surprised to learn that Mead had not yet appeared. It appears that the unfortunate young man must have become frightened or bewildered and turned into the drift. His body was found at 9 o'clock the night of the 29th, standing in the mud with his right side against the breast boards and his face also in the mud. The water had completely filled the drift making it evident that Mead had been drowned. The mine was well timbered and everything at hand necessary for making the tunnel and drifts secure from danger. Had the board, instead of a piece of lagging been handed to Peterson the accident would in all probability not have happened.

Ferdinand Ermlech. On Sunday morning, September 1st, at the Never Sweat Mine, Butte, Ferd. Ermlech met with a peculiar accident which resulted in death about three hours later. In company with three other men he was engaged in taking cars from the cage on the surface. Ermlech had taken a load car from the lower deck and replaced it with an empty. He then pulled the chairs but as he did so he heard a call from the engineer and thought it was an order to take the car off. He placed one foot on the cage and leaned forward to unhook the car when the cage was suddenly lowered and the bottom of the upper deck caught Ermlech across the left arm and left thigh, breaking both and also the pelvic bone. The thigh was badly lacerated. Ermlech was quickly taken out and removed to the St. James Hospital where he died about three hours later. One of Ermlech's fellow workmen says Ferd. was rather slow in hooking the empty car and pulling the chairs so the engineer called to him to "pull the chairs in order to drop the cage and take off loaded cars on the upper deck. The accident was caused from a simple misunderstanding of the order.

George A. Weaver. On October 2d, George A. Weaver met with instant death at the 1,100 foot level of the St. Lawrence Mine in Butte. The St. Lawrence had been closed down for several weeks and no ore was hoisted. In the east shaft, however, water was being hoisted continually. On Monday a couple of men, George A. Weaver and Tim McCarthy, were sent to the 1,100 level to clean up the waste. About 2:30 Wed-

nesday morning John Grant, the shift boss, who was below said that one of these men must go up with the loads of ore and take the cars off at the surface. The car man who generally attends to this part of the work was engaged in opening the valves of the water bucket which was coming up, filled, every 2 1-2 or 3 minutes in the west shaft, from the 1,100 level. Weaver got on to the lower deck car-load of ore and started for the surface. After the cage had ascended to a point between the 1,000 and 900 levels the 5-8x6 in. cable parted about 35 feet from the bucket and the cage dropped into the sump about 140 or 250 feet below. The bulk heads had been removed in order that the bucket might go lower down; hence the cage with its loads of waste and human freight struck the water 20 or 25 feet in depth, and sunk to the bottom. When the cage was recovered the car on the lower deck (the car on which Weaver was riding when the cage was being hoisted upwards in the early morning) was standing on one end and comparatively empty. Weavers body was presumably in the bottom of the sump. Sup't O'Neil had several hooks made and attached to long rods. With these grappling instruments the body was found and recovered. Aside from a broken arm, a small opening in the back of the skull and a few abrasions of the skin about the face the remains were uninjured. I made a thorough examination of the shaft, cage and rope and found that the copper-acid water had eaten the wires in the latter and weakened it to that extent it was incapable of sustaining the weight of the cage and two cars of waste. I also examined the safety appliances attached to the cage and found the cogs in the dogs were so firmly rusted in to the grooves between the lower cogs that they could not be moved by simple, ordinary means. Had the safety appliances been in good working order at the time the rope parted the cage would probably not have dropped an inch and it is reasonable to presume that Weaver would not have lost his life.

John McArthur, received such severe injuries while in the act of oiling the chairs at the 40 foot station of the High Ore Mine, Butte, on October 18th, that he died at the hospital a few hours subsequent. McArthur stepped into the pump compart-

ment at the station and reached over to oil the chairs on the north side of the shaft, while in a bent position the cage ascended from the 200 foot level. The guides are so perfect and machinery so complete that no noise whatever is made by the hoisting or lowering of the cages. One of the employes who was doing car work with McArthur saw the rope moving upward and attempted to warn him of the danger. The alarm came too late and the top of the cage struck McArthur in the upper left face, crushing in the skull and ruining one eye. He was quickly taken out and sent to the hospital. Foreman O'Neil said at the Coroner's inquest that he had never ordered the chairs oiled, never knew the men were in the habit of oiling them and in fact that there was no necessity for oiling them.

Thomas H. Sandow. A timberman employed at the Mountain View Mine, Butte, was instantly killed on the 23d of October, while descending the shaft. He had been in the best of health and was a strong, robust man, but like others who have met a similar fate and for no known cause he was taken with a sudden fainting spell while going below. He dropped to the floor of the cage, his head came in contact with a wall plate, and the left side of the skull was crushed, resulting in instant death.

James Murphy. On the night of November 5th, James Murphy, a miner working in the shaft of the Clipper Mine, located on Camp Creek, Silver Bow County, fell from the 100 foot station to the bottom of the shaft a distance of 115 feet, sustaining thereby such severe injuries that death resulted. The Clipper shaft was originally two compartment but the management were working from the 200 level upwards, on one side, to increase the size of the shaft to a three compartment. When Murphy went on shift he started to climb to the 100 for the purpose of seeing how the work had progressed. He was repeatedly warned by Pat Toomey, the shift boss not to go up as it made no difference to him (Murphy) how the work was done. After he had reached the 100 level Murphy attempted to cross the main or center compartment on the timbers, lost his balance and fell as above related. The Coroner's jury returned a verdict to the effect that James Murphy lost his life through his own recklessness and carelessness.

David Magor, was instantly killed on the 8th of November, in the Mountain Chief Mine. I visited the scene of accident immediately after its occurrence and attended the Coroner's inquest the day following. I give the verdict of the Coroner's jury which reads as follows:

"It appears that on the morning of November 8, 1895, David Magor, a miner working in the west drift of the 400 foot level of the Mountain Chief Mine, at Meaderville, Silver Bow County, left the face of the drift and started for the powder magazine, located in a crosscut 250 feet away. In a very few minutes an explosion was heard by other employes of the same mine. Investigation by his fellow miners resulted in the finding of Magor's lifeless and mangled body lying across the track of the 400 level at the entrance leading to the magazine. There has been no evidence introduced before this jury to show how the accident occurred. Therefore from lack of positive evidence this jury is compelled to return a verdict of accidental death."

In my opinion Magor was fitting a cap over the end of the fuse and instead of forcing the sides together with a wooden instrument placed it between his teeth, which many miners very carelessly do. I am convinced of this from the fact that I found a few pieces of a cap in Magor's face after the body was laid out at the undertaker's rooms.

Charles McGann was instantly killed in the Poulin shaft about 5 o'clock last Monday evening, November 11th, through his own carelessness and failure to obey orders says the Anaconda Standard. Foreman Tom Bulger, Mike Dwyer and McGann were engaged in plumbing in the east shaft between the 600 and 700-foot levels, when the accident occurred. Bulger and Dwyer went down to the 700 and McGann remained at the 600-foot station. No hoisting was being done in the east shaft and McGann was told by the foreman to adjust the line and he was expressly instructed to remain there until the work was completed, as it was feared that if he moved he might knock some loose dirt down on the men at work below. It was the foreman's intentions to plumb the center compartment which is at present used only by the sinking crew, after plumbing the east compartment.

Instead of remaining in the east compartment, however, as he had been instructed, McGann, after adjusting the lines, took up a plank and laid it across the shaft and presumably sat down upon it to rest. In the meantime the candles of the men at the 700 gave out and Dwyer was sent up to the 600 for a fresh supply. Supposing that McGann was in the east compartment, he rang the cage in the center up to the 600. The bonnet of the cage knocked McGann from the plank on which he was sitting and he was thrown over against the center piece between the two compartments. His head struck the center piece and he was killed instantly. The cage was running very slowly at the time, as the engineer had instructions to run slow while work was going on in the shaft. McGann was within a foot of the rope and it is regarded as very strange that he did not see it moving and get into the station. The Coroner's jury returned a verdict of death caused on account of disobedience of orders and gross carelessness on the part of the deceased.

Benjamin Armstrong, lost his life almost instantly, on the 12th of November, in the shaft of the Golden Chariot Mine, located at the Head of Climax Gulch, Silver Bow County. Armstrong and his partner, Milton Keller, both owners in the property, were inspecting the shaft, which had not been worked for over a year, with a view to putting it in shape, so that they could hoist out some of the very rich ore in the 40-foot stope. Armstrong had just passed some lagging from the 50 to his partner on the 40-foot level and was preparing to climb upon the timbers, the ladders having been taken out below the 40, when the mine was last in operation. He threw one arm around an upright post preparatory to ascending when the timber gave way and Armstrong losing his balance fell down the shaft 50 feet to where the vertical changes to the incline, striking the timbers head first and then rolling into the sump. Keller who saw the accident descended the shaft immediately, got Armstrong out of the water and did what he could to resuscitate him, but death ensued in three or four minutes. His head was badly bruised and he also sustained internal injuries. The Coroner's jury returned a verdict in accordance with the facts stated above.

NON-FATAL ACCIDENTS.

Henry Nankivell, a miner at the Parrot Mine, Butte, met with a severe accident on December 14th, 1894, on the 1st floor of the 500-foot level. He was at work timbering and just about quitting time, raised a pick to sound the ground on the hanging wall. Before the blow was struck, however, about a ton of waste rock fell from the wall in front of and above him. The rock caught Nankivell unawares and nearly buried him beneath its weight. After his removal to the hospital it was learned he had sustained a compound fracture of the right leg between the knee and ankle and a compound fracture of the left thigh aside from external bruises.

W. H. Thomas, a miner in the Glengary Mine, had a narrow escape from death on the 11th day of February, while working in the raise between the 400 and 200 levels. Thomas and his partner were about to put in a new set of timbers. Being in need of something Thomas started to descend the raise and caught hold of a rope intending to lower himself. His foot slipped, his hand hold broke loose and he fell a distance of 230 feet down the timber chute. When his partner descended to where Thomas had fallen he found the man trying to get onto his feet. Thomas sustained several severe bruises and contusions but escaped without having broken any bones. He was removed to the hospital of Doctor Geo. H. Wells.

Nicholas Termbullock, was pretty badly hurt on February 11th, while at work on the 15th floor of the 400 foot level of the Nettie Mine, at Burlington. He had raised a plank and descended to the floor below for the purpose of clearing a blocked chute. He began his labors without making a close examination of his surroundings when about 500 pounds of the hanging wall fell upon him. He received several very severe bruises but none of a serious nature. He was soon removed to his home in Burlington, where he received the proper care and attention.

Jerry Connell, came very near losing his life in the Mountain Con. Mine, Butte, on February 28th. While working down a body of ore, made loose from a blast fired by the men on the

previous shift, about 600 pounds of rock fell from the side, struck Connell and knocked him to the second floor where he came in contact with an empty car. His right leg was broken and the body badly bruised. He was removed to the hospital.

Pat. Butler, a laborer in the St. Lawrence Mine, Butte, was caved on in the 1,000 foot level on the 6th of April, and sustained some pretty severe bruises. Butler had been shoveling and left his work to "visit" or look at the men who were putting in a set of timbers. The cave took place at this point and knocked Butler to the floor below. His injuries were not of a necessarily dangerous character, but sufficient to cause his removal to the hospital.

Samuel Coombs, a miner working in the Lone Pine Mine, at Ponsonby, Beaverhead County, met with a horrible accident on the 6th of April, in the south drift of the 1,800 level. The night previous to the accident Walter Bradshaw had fired two shots just before quitting time. When Coombs went to work in the morning he removed the loose dirt and then prepared for drilling by cleaning away the smaller particles of rock. In feeling round with the scraper he found a hole. He inserted the scraper into the hole with considerable force when an immediate explosion followed throwing Coombs back against the wall. J. H. Fisher was soon at the scene of accident and he discovered that Coombs' face was filled with small pieces of rock and his eyes nearly blown out of his head. His left hand and wrist were also badly lacerated. Coombs was removed to Wells' Hospital in Butte.

C. H. Chaim, a miner in the employ of the Butte Mine, at Butte, on the 2d day of June, had his left leg broken by a fall of rock while he was at work making room for a set of timbers on the 9th floor of the 1,000 foot level. The ground had been tested and was considered safe. About 150 pounds of rock fell from the hanging rock about 3 1-2 feet and struck Chaim, with force enough to break his leg as above stated. Upon examination of the property I could find no reason to attach blame to the company.

Robert O'Malley. On June 25, while at work on the sill floor, 800 foot level west, of the Anaconda Mine, Robt. O'Malley received such severe injuries that for a time his life was considered in danger. O'Malley had blasted a round of holes and was working down the loose ground when about 150 pounds of rock fell upon him. He was knocked down and for a time lay unconscious. The examination of his injuries after his removal to the hospital showed that both legs were fractured, the back severely injured, and that he was injured internally. I made a very close examination of the level where the accident occurred, but found the timbering well done and in good shape.

Michael Hughes. On June 26th, Michael Hughes was badly injured in the shaft of the Washoe Mine, near the 500 foot level. He was engaged in putting in a center block to hold a set of timbers when a rock weighing 2 1-2 tons fell from the south side and twelve feet up from the bottom of the shaft. The great weight fell in such a manner that Hughes was forced down, but in such a position he was only severely injured. Examination of his wounds showed several cuts on the scalp and a comminuted fracture of the left leg below the knee. I was at the mine at the time of the accident and went below at once. I made a thorough examination and found everything in excellent shape in other parts of the mine.

John C. Kelley. On July 5th, while at work on the 3d floor of the 900 foot level of the High Ore Mine, John C. Kelley was pretty badly bruised by a mass of loose dirt which he was in the act of taking down. A round of blasts had been set off on the evening of July 3d, and the ground left in a loose condition. Kelley sent his partner after some tools and while he was gone about one-half ton of dirt fell from the hanging wall a portion of the material striking Kelley on the back and legs. No bones were broken. I inspected the place of accident and found the timbering there well done.

Tom Sullivan, had both legs broken by a cave of rock at the St. Lawrence Mine, on the 9th of July. He was taken to the hospital where the physicians after careful examination concluded Sullivan was also injured internally.

Jacob Hoar, very nearly lost his life in the shaft of Silver Bow No. 1, Butte, on July 27th. Hoar and his partner had been cleaning up the pump station at the 1,000 foot level, and on the morning of the 27th changed shifts. They were ordered to go to work on the 2d floor of the 1,000 east. Upon their arrival their hammers were missed and Hoar went to look for them. He crossed the main shaft at the pump station but failed to find the tools. He started to return and when midway of the shaft he was caught by the cage which was bringing some of the men down from supper. James Bilkey seeing a man underneath sprang from the cage and signalled the engineer to stop. The cage having come to a stand still was at once rung up a short distance and Hoar taken out rather badly bruised about the head and shoulders. There is a roadway in the pump compartment of the shaft from one side to the other built for men to cross on and Hoar should have used it when he went in search of his tools instead of endangering his life by taking the route he did.

W. H. Foster. At the Silver Bow Mine, No. 1, on September 1st, W. H. Foster, was quite severely bruised by a fall of ground. Himself and James Tippet were standing a set of timbers on the 4th floor of the 700 foot level. Foster bent down to move a plank that he might have room to plant an angle brace. While in the stooping position about 150 pounds of the hanging wall fell from above, caught Foster on the back and bruised him so seriously he had to be removed to the hospital. The ground and mine throughout is well timbered.

Jerry T. Hanley, while at work on the sixth floor of the 600 foot level of shaft No. 2, of Mountain Con Mine, Butte, on September 20th, Jerry Hanley had a narrow escape from almost instant death from a cave. Hanley and Jno. J. Dougherty were taking down a portion of the hanging wall. Hanley picking some loose rock when suddenly about half a ton of the roof fell. A portion of the heavy matter struck Hanley and knocked him down. He was at once removed to the hospital where it was learned that no bones were broken, but the bruises and contusions were very painful. I was on the ground shortly after the accident and found the timbering and floors in excellent condition.

MINES.

SILVER BOW COUNTY.

The Parrot, located in Butte, owned and operated by the Parrot Copper Co. J. E. Gaylord, Manager, Ben. Libby, Supt, Matt Hodge, Foreman, employs 120 miners underground and 21 topmen. The main shaft is 911 feet deep, 3 compartment to the 400 foot level and 4 compartment from 400 to bottom of shaft. 44 feet has been sunk this year. The mine is timbered with square sets and is a copper and silver producer. Hoisting is done with double deck cage handled by a 1-2x5 1-2 inch steel rope and 10x16 Fraser and Chalmers engine. Three engineers are employed, safety appliances, tested three times each week, are in use, there are four exits and ventilation is perfect.

Note—Superintendent Libby has introduced in the Parrot the best system of ventilation in the state. It is so perfect that the air in the lowest levels is equally as pure as that on the surface. His rules governing the employees are so carefully arranged and so thoroughly enforced that accidents are of less frequency than in any other mine of the same capacity in Montana.

Parrot No. 6, owned, operated and officered by the same parties as the Parrot. Employs 8 men underground and three on top. The shaft is two compartment, 200 feet deep and timbered with square sets. The character of ore is copper-silver. Hoisting is done with bucket, 5-8 inch steel rope and 6x10 Hendry & Mayers engine. Two engineers are employed. There is but one exit at present (October 24) but a second one will be completed inside of two weeks. Ventilation is good.

Note—This mine is located west of the original Parrot. As soon as the second exit is opened the shaft will be sunk to the 400 foot level, and a larger force of men put to work.

The Virginius, of Butte is owned by the Parrot Company, but is under lease to D. G. Bricker, who is also Superintendent and Gen'l Manager. Cyrus Bell is Foreman. 60 miners are em-

ployed underground and 10 men on top. The main shaft is two compartment 300 feet deep and timbered with square sets. Hoisting is done with bucket, 3-4 inch steel rope and 8 1-2x10 link motion slide valve engine. Three engineers are employed there are two exits and ventilation is good. Character of ore copper and silver.

Note—This is the only mining plant in Montana that is run exclusively by electricity and so far it has proven a complete success.

Brickers Anaconda, owned by Anaconda Copper Company, under lease to and operated and managed by D. G. Bricker, Cyrus Bell, Foreman, employs 20 miners underground and 4 topmen. The shaft is two compartment, 315 feet deep, all sunk in 1895. Square sets are used in timbering and the ore produced is copper and silver. Single deck cage, 3-4 inch steel rope and 8 1-2x10 cylinder, Copeland engine are used in hoisting. Safety appliances, tested each week, are in use, there is but one exit but ventilation is very good.

Note—This mine is on the great south vein of the Anaconda proper.

The Atlantic, located at Gunderson, owned and operated by the Butte and Boston Copper Co., Thomas Couch, Manager, Josiah Gilbert, Sup't and Foreman, employs seven miners and three topmen. The shaft is two compartment, 300 feet deep, all sunk in 1895, timbered with square sets. Single decked cage, 3-4 inch steel rope handled by 8x10 Iron Bay engine. Two engineers are employed, safety appliances tested once a week are in use, and ventilation in shaft is very good.

Note—The Butte & Boston Copper Co. are sinking this shaft 3-4 of a mile east of the original Colusa mine and will strike the main lead of that plant.

East and West Colusa located at Gunderson, owned and operated by the Butte and Boston Copper Mining Co., Thomas Couch, Manager, Josiah Gilbert, Sup't, works 194 miners underground and 38 topmen. The main shaft is 3 compartment 600 feet deep, timbered with square sets and 10x10 timbers. Double decked cage, 3-8x5 inch steel rope handled by Ledgerwood, 240 horse power engine are used in hoisting. 12 engi-

neers are employed, safety appliances, tested each week, are employed, there are five exits and ventilation is extra good. Character of ore copper and silver.

Note—This mine has connections with the Mountain View at each level, has air courses over each level, electric lights in each level, at every station and in every crosscut. Superintendent Josiah Gilbert has the entire Colusa group in excellent shape so far as timbering is concerned and each mine is a model of cleanliness. He is also deserving of great credit for measures adopted to prevent accidents in the mines.

The Moscow, located at Butte, owned and operated by the Parrot Copper Company, J. E. Gaylord, Manager, Ben Libby, Sup't, J. R. Evans, Foreman, employs 12 miners underground and two topmen. The main shaft is two compartment, 300 feet deep and timbered with square sets. Character of ore copper and silver. Bucket, 3-4 inch steel rope handled by 6x10 Ledgerwood engine are used in hoisting. Two engineers are employed, there are two exits and ventilation is good.

Note—The Moscow has an air shaft 300 feet east of the main hoisting shaft. All the mines under Sup't Libby's management are well ventilated.

The Gagnon, located at Butte, owned and operated by the Colorado Smelting and Mining Co., C. W. Goodale, Sup't and Manager, John Hewett, Foreman, employs 140 miners and 15 laborers underground, and 20 topmen. The main shaft is an incline, three compartment, 1,324 feet deep. 105 feet has been sunk this year. Timbering is done with square sets. Skip, 1 inch rope, handled with two double direct, first motion, 22x36 engines are used in hoisting. Three engineers are constantly employed, safety appliances, tested every week, are in place, there are two places of exit and ventilation is good.

Note—The Gagnons main air shaft is located 400 feet west of the main hoisting shaft and connects with each level. This is the first mine to introduce the finger-board guide. They are placed at every turn or angle in the underground workings and point to the places of exit thus affording protection to men in case of danger by fire or flood.

The Ramsdel Parrot, located at Butte, owned and operated by Paschal & Co., Howard Paschal, Superintendent and Manager, Geo. W. Powell Foreman, employs seventeen miners and one topmen. The main shaft is two compartment, 600 feet deep, timbered with square sets and stulls. Character of ore copper and silver. Single deck cage 3-4 in. steel rope, handled by 10x14 cylinder engine are used in hoisting. Two engineers are employed. Safety appliances, tested once a week, are in place. There are two exits and ventilation is good.

Washoe, located at Butte, owned and operated by the Gold Hill Copper Co., C. F. Booth, Sup't and Manager, James Higgins, Foreman, employs 16 miners and three topmen. The depth of the two compartment main shaft is 500 feet, 375 feet of which has been sunk this year. Timbering is done with square sets and stulls. Single cage, 1 inch steel rope handled by 6 1-2x8 double cylinder engine are used in hoisting. Two engineers are steadily employed, safety appliances tested every other week, are in place, there is but one exit yet ventilation is good.

Note—A crosscut is being driven to connect with the Gold Hill Mine on the west and it is expected to make the connection in about one month from this date, September 26th. When completed the Washoe will have three exits.

The Gold Hill, located at Butte, owned and operated by the Gold Hill Copper Co., C. F. Booth, Sup't and Manager, James Higgins, Foreman, employs 22 miners and 3 topmen. The main shaft is three compartment, 500 feet deep, and timbered with square and half sets. Character of ore copper and silver. Hoisting is done with single deck cage, 1 1-8 inch steel rope handled by a 12x16 double cylinder, Park & Leasey engine. Three engineers are regularly employed, safety appliances, tested every two weeks, are in place. There is but one exit but ventilation is good.

Note—This shaft will soon be ventilated from an air shaft now being sunk on the north and from a crosscut that is being driven on the 500 foot level of shaft No. 1. At present ventilation is supplied through air pipes.

The Anderson, located at Butte, owned by Fred Anderson, and Lee Mantle, operated by C. H. Allen, who has the property under lease, J. W. Harris, Foreman, employs nine miners and two topmen. The shaft is two compartment, 200 feet deep, timbered with square sets. Character of ore copper and silver. Bucket, 1-2 inch steel rope and 6x8 Ledgerwood engine are used in hoisting. Two engineers are employed, there is but one exit and ventilation is fair.

The Poulin, located at Butte, owned and operated by the Poulin Copper Co., W. E. Hall, Manager, and Sup't, Thos. Bulger Foreman, employs 32 miners and 3 laborers underground, and two men on top. The shaft where work is now being done has been sunk this year and has attained a depth of 600 feet. It is three compartment timbered with square sets. The length of drifts is 665 feet and of crosscut 110 feet. Character of ore copper and silver. Hoisting is done with single decked cage, 1 inch steel rope and geared 12x14 Fraser and Chalmers engine. Three engineers are employed. Safety appliances, tested once a week, are in place, there are four places of exit and ventilation is good.

Note—The management is now making preparations to sink the main shaft to the 1,000 foot level. After this depth is attained cross-cutting will be commenced.

The Original, located at Butte, owned and operated by W. A. Clark, A. H. Wethey, Manager, Charles Clark, Sup't, Thos. Bryant, Foreman, employs 26 miners, six laborers underground and two topmen. The main shaft is two compartment 800 feet deep, timbered with square sets and stulls. Character of ore copper and silver. Single deck cage, 1 inch steel rope handled by a Griffith and Wedge engine are used in hoisting. Three engineers are employed, safety appliances, tested once each week, are in place, there are three exits and ventilation is good.

Note—In the Original, Steward and Colusa-Parrot, all owned by W. A. Clark, a peculiarly constructed fire-door or trap has been placed in the shaft, two sets below the surface. In case of fire in the shaft house three doors can be instantly lowered thus closing the shaft and preventing the fire from

running down on the timbers. Notices are also posted in these mines and on the surface forbidding men to ride on loaded cars and also from leaving candles burning when the men quit work.

The Steward, located in Butte, owned, operated and officered by the same parties as the Original, employs 20 miners underground and two topmen. The main shaft is double compartment, 600 feet deep, timbered with square sets and stulls. 200 feet has been sunk this year. Character of ore copper and silver. Hoisting is done with skip and 1 inch steel rope handled by a 10x12 Ledgerwood engine. Three engineers are employed, safety appliances, tested each week, are in place. There are two exits from the 400 foot level and ventilation is good.

The Colusa-Parrot, located in Butte, owned, operated and officered by same parties as the Original and Steward mines, Thos. Kilgallon, Foreman, employs 37 miners and 7 topmen. The double compartment shaft is 900 feet deep, 100 of which has been sunk this year. Square sets are used in timbering and the character of ore is copper and silver. Hoisting is done with single deck cage 1-2x4 inch steel rope handled by 16x30 Corliss engine. Three engineers are employed, safety appliances, tested each week, are in place, there are two exits from 900 level and ventilation is good.

Note—The hoisting engine was manufactured by the Montana Iron Work Company of Butte.

The Pennsylvania, located in Butte, owned and operated by the Boston & Montana Mining Company, Thos. Couch, Gen'l Manager, Richard Dawe, Sup't and Foreman, employs 95 miners and 14 topmen. The main shaft is three compartment 620 feet deep, timbered with square sets. Mode of hoist, cage, 3-8x5 inch steel rope and 19x48 cylinder engine. Three engineers are employed, safety appliances, tested every week, are in place, there are 4 exits and ventilation is good. Character of ore copper and silver.

The Mountain View, located in Butte, owned and operated by the Boston and Montana, Thomas Couch, Gen'l Manager, Richard Dawe, Sup't and Foreman, employs 179 miners and

29 topmen. The main shaft is three compartment, 1,225 feet deep, timbered with square sets 10x10. 100 feet has been sunk this year. Character of ore copper and silver. Mode of hoist full cage 5-8x4 1-2 inch steel rope and 15x48 cylinder engine. Five engineers are employed, safety appliances, tested every week, are in place, there are five exits and ventilation is good.

Note—The Mountain View under the direct supervision of Superintendent Dawe is connected at the levels with the Colusa Mine. About every 250 feet an upraise has been put through from each level to the one above thus affording means of escape in case of fire or other danger. There are also large fire doors arranged in the levels between the two mines so that in case of fire these doors may be closed and prevent the smoke and gas from passing through. Superintendent Dawe has had air courses placed in the roof of each level in the Mountain View and Pennsylvania. He also keeps on hand a large reserve of first class ore.

The Anaconda, Never Sweat, Mountain Con, Green Mountain, High Ore No. 1, High Ore No. 2, Modoc, are the principal mines of the Anaconda Copper Company. Marcus Daly is Gen'l Manager, and M. J. O'Farrell, Assistant Manager. The Anaconda and Never Sweat join each other and are under the superintendence of John O'Neil. These two mines employ 579 miners underground and 90 topmen. The main shaft is three compartment, 1,250 feet deep, timbered with square sets and 10x10 timbers. The mode of hoist in the Anaconda is double decked cages, 1-2x6 inch steel rope and 20x60 cylinder J. P. Morris engine. Three engineers are regularly employed, safety appliances, tested every week are in place, there are five exits and ventilation is good.

Note—The Never Sweat, joining the Anaconda on the west is a new mine which the Company have opened up since my last report. The above report of men employed includes both mines.

The Anaconda has two air compressors in constant use. The old compressor is a 30x60 with capacity for handling 60 drills.

The new one is an Ingersoll and Sergeant, size 16x22, capacity 32 drills.

The Never Sweat hoist is supplied with a 20x48 Dickson Corliss engine and 1-2x6 inch steel rope with double deck cage.

The Mountain Con, Larry Manning, Sup't, James Keegan, Foreman, employs 425 miners and 39 laborers underground, and 68 topmen. The main shaft is three compartment, 965 feet deep, 100 of which has been sunk this year. Square sets are used in timbering and character of ore is copper and silver. Double decked cages, 1-2x6 inch steel rope, handled by a Webster, Campbell & Lane 20x48 cylinder Corliss engine are used in hoisting. Three engineers are steadily employed, safety appliances, tested twice every week, are in place, there are five exits and ventilation is good.

Note—the Mountain Con has two hoisting shafts, each 14 feet long by 4 feet 8 inches wide inside the timbers. It is connected with the Green Mountain on the east and with the Buffalo on the west at each level. Superintendent Larry Manning is one of the first miners of Silver Bow County and provides for the safety of his men with every necessary precautionary measure. The Mountain Con uses an Ingersoll and Sergeant Air compressor, size 16x22 with capacity for handling 32 drills.

The Green Mountain, located at Butte, Joseph Laird, Sup't, John J. O'Mara, Foreman, employs 175 miners, 30 laborers underground and 45 topmen. The main shaft is 1,200 feet deep 200 feet of which has been sunk this year. The shaft is three compartment, length of drifts 450 feet, length of crosscuts 1,357 feet, 10x10 timbers in square sets are used for all timbering. Character of ore copper and silver. Mode of hoist double decked cages, 1-2x5 inch steel rope handled by an 18x48 cylinder engine. Three engineers are employed, safety appliances, tested once every week, are in place, there are three exits and ventilation is good.

Note—The Green Mountain is connected on the east with the Wake-Up-Jim Mine at the 400, 500, 600, 700, 800, and 900 foot levels and on the west with the Mountain Con at the 500,

600, 700 and 800 foot levels. The new hoist is supplied with a Webster Campbell & Lane Corliss Engine 28x72 cylinder, the largest engine in Montana, used for mining purposes. Capacity 2,500 feet steel rope and three decked cages. Size of rope 5-8x7 in. Air compressor, Ingersoll & Sergeant, size 16x22 capacity 32 drills.

The High Ore No. 1, located at Butte, John O'Neil, Sup't and Foreman, employs 282 miners underground and 27 topmen. The main shaft is three compartment, 1,200 feet deep, square sets and stulls are used in timbering, character of ore copper and silver. Mode of hoist double decked cages, 5-8x6 inch steel rope handled by 20x48 cylinder Corliss engine. Three engineers are steadily employed, safety appliances are in use and tested each week, there are six exits and ventilation is good.

Note—The High Ore hoist was constructed by H. Unzicker of Chicago in 1893, for the World's Columbian Exposition, and is a model of mechanical ingenuity. The High Ore mine is on the extreme eastern end of the Anaconda Syndicate chain of mines. I am informed at this date (September 21st) that in a few days the management will begin sinking and go to the 1,600 foot level. When this depth is attained cross-cutting will be started and prosecuted until the great lead of the High Ore is reached. The air compressors is an Ingersoll & Sergeant 16x22, capacity 32 drills.

High Ore No. 2, located at Butte, Samuel Hall, Sup't and Foreman, employs 18 miners underground and six eopmen. The main shaft is three compartment, 925 feet deep and timbered with square sets. 340 feet has been sunk this yar. Mode of hoist single deck cage, 5-8x5 inch steel rope, handled by a 20x48 cylinder Corliss engine. Two engineers are employed, safety appliances, tested every week, are in place. There is but one exit but the ventilation is good.

Note—The only work being done is sinking the main shaft. This shaft is 18x5 feet inside the timbers and is the largest in Silver Bow County. With the exception of cutting stations no other work aside from sinking has been done. This is still progressing and will be continued till a depth of 1,200 feet has

been reached when cross-cuts will be driven to cut the principal High Ore and other leads.

The Modoc, located at Butte, William Skyren, Sup't William Shovell, Foreman, employs 43 miners and 9 topmen. The main shaft is three compartment, 1,000 feet deep and timbered with square sets. Character of ore copper and silver. Mode of hoist single deck cage, 1-2x4 inch steel rope, handled by 18x20 cylinder Dickson engine. Two engineers are employed, safety appliances, tested every week, are in place, there are three exits and ventilation is good.

Note—400 feet has been sunk in main shaft this year. There is but little stoping going on at present (September 27th). The principal work is crosscutting from the 600, 700, 900 and 1,000 foot levels.

The St. Lawrence, located and adjoining the Anaconda on the east, John O'Neil, Sup't, is at present undergoing repairs machinery and timbering are being thoroughly overhauled. 18 men are underground overhauling the pumps, readjusting pipes and attending to the work necessary to put the plant in first class working order. The mine will soon resume with about 200 or 250 miners and laborers.

The Ground Squirrel No. 2, located at Butte, owned by the Anaconda Copper Company, is under lease to Hank Pickering, who manages the entire plant. He employs 26 miners and four topmen. The main shaft is two compartment, 130 feet deep, all sunk this year. Timbering is done with square sets and stulls. Hoisting is done with bucket, 3-4 inch steel rope, handled by an 8x10 cylinder Autumway Iron Works engine. Three engineers are employed, there are three exits and ventilation is good.

Note—This mine joins the "J. I. C." and is ventilated through workings of the J. I. C. and Ground Squirrel No. 1.

The Ground Squirrel, located at Butte, owned by James B. Haggin, operated by the Anaconda Copper Co., Marcus Daly, Manager, M. J. O'Farrell, Assistant Manager and Sup't, Pat Boland, Foreman, employs 100 miners and four topmen. The main shaft is two and three compartment, 350 feet deep,

150 feet has been sunk this year. Timbering is done with square sets and stulls. Character of ore copper and silver. Mode of hoist single deck cage 1 1-8 in. steel wire rope handled by a double action, 10x12 cylinder engine. Three engineers are employed, safety appliances, tested every day, are in place, there are 4 exits and ventilation is A1.

The Clipper and Columbia Mines, located at the head of Camp Creek, Silver Bow County, owned and operated by the Anaconda Copper Company, Patrick Kane, Sup't and Foreman, employs 58 miners and 6 topmen. The shafts of either mine are two compartment, 200 feet deep and timbered with square sets. These properties are but just started on a copper and gold belt. So far only work preparatory for development of the mine has been done. Cross-cutting will be commenced as soon as the 300 level is reached.

